

**U.S. DEPARTMENT OF TRANSPORTATION (DOT)
RESEARCH AND INNOVATIVE TECHNOLOGY ADMINISTRATION
(RITA)**

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**INTELLIGENT TRANSPORTATION SYSTEMS (ITS)
PROGRAM ADVISORY COMMITTEE**

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**TRANSCRIPT OF MEETING PROCEEDINGS
MARCH 2-3, 2011**

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The ITS Program Advisory Committee met in the Elizabeth Ann Room B at the Ann Arbor Marriott Ypsilanti at Eagle Crest, 1275 South Huron Street, Ypsilanti, Michigan, Dr. Joseph Sussman, Chair, presiding.

MEETING PARTICIPANTS

COMMITTEE MEMBERS

DR. JOSEPH SUSSMAN, Massachusetts Institute of Technology, Chair
ROBERT DENARO, NAVTEQ Corporation, Vice Chair
SCOTT F. BELCHER, Intelligent Transportation Society of America (ITS America)
JOE CALABRESE, Greater Cleveland Regional Transit Authority
ROBIN CHASE, Meadow Networks (via telephone)
DR. ADAM DROBOT, 2M Companies, Inc.
ANN FLEMER, San Francisco Metropolitan Transportation Commission (via telephone)
J. PETER KISSINGER, AAA Foundation for Traffic Safety
DON OSTERBERG, Schneider National, Inc.
DR. PETER SWEATMAN, University of Michigan Transportation Research Institute
JAMES VONDALE, Ford Motor Company

ITS JOINT PROGRAM OFFICE (JPO) STAFF

JOHN AUGUSTINE, Managing Director, ITS Joint Program Office
VALERIE BRIGGS, Team Lead, Knowledge and Transfer Policy
WALTON FEHR, Program Manager, Systems Engineering
STEPHEN GLASSCOCK, Program Coordinator, Designated Federal Official
MIKE SCHAGRIN, Program Manager, Safety
STEVE SILL, Program Manager, Vehicle Safety Technology, ITS Architecture and Standards

ALSO PRESENT

PETER H. APPEL, Administrator, RITA
DR. ROBERT BERTINI, Associate Administrator, RITA
JIM BUCZKOWSKI, Technical Fellow and Director of Electrical and Electronic Systems
Research and Advanced Engineering, Ford Motor Company
JOHN MADDOX, Associate Administrator, NHTSA
RON MEDFORD, Deputy Administrator for Vehicle Safety Research, NHTSA
CHRIS PANGILINAN, Special Assistant to the Deputy Administrator, RITA
CHARLIE VELEZ, Citizant, Inc.

P-R-O-C-E-E-D-I-N-G-S

WEDNESDAY, MARCH 2

(1:45 p.m.)

OPENING REMARKS

CHAIR SUSSMAN: Well, welcome to this meeting of the ITS Program Advisory Committee. As President Bush once said, this is a coalition of the willing, and the willing is a relatively small fraction of our overall group.

The way I'd like to start is just going around. We've got some faces around the table that people may not have met before, and I think -- Ann, are you on the line?

MS. FLEMER: Yes, I am, Joe.

CHAIR SUSSMAN: That's Ann Flemer. I'm very pleased you could join us remotely. Thank you.

MS. FLEMER: You're welcome. I'll stay on throughout the whole meeting, as much as I can.

CHAIR SUSSMAN: I appreciate that. Thank you. That's great.

So, Ann, I want you to say two words about yourself. We have some people around the table who you haven't met, I don't think. So a sentence or two about who you are.

MS. FLEMER: Sure. I am the Deputy Director for Policy for the Metropolitan Transportation Commission. We're the MPO for the San Francisco Bay Area. I'm also the current chair of the board for ITS America.

CHAIR SUSSMAN: Thank you, Ann.

Scott, do you want to take us around?

MR. BELCHER: Hi, I'm Scott Belcher. I'm the president of ITS America.

CHAIR SUSSMAN: And Adam.

DR. DROBOT: Okay. I'm Adam Drobot. I am the managing director and CTO of 2M Companies. It's a investment firm.

CHAIR SUSSMAN: Thank you.

Don.

MR. OSTERBERG: Don Osterberg. I'm a senior vice president, I'm accountable for safety, security and regulatory compliance for Schneider National, a trucking company headquartered in Green Bay, Wisconsin.

CHAIR SUSSMAN: And you're going to gloat a bit about the Packers -

MR. OSTERBERG: I didn't even go there. See, I didn't even go there.

CHAIR SUSSMAN: The Packers' extraordinary victory.

MR. OSTERBERG: The trophy is home.

CHAIR SUSSMAN: Oh, indeed.

Peter.

DR. SWEATMAN: Thanks, Joe. I'm Peter Sweatman, director of the University of Michigan Transportation Research Institute, about 12 miles from here. I'm a board member of ITS America, and I chair the Coordinating Council.

CHAIR SUSSMAN: Steve.

MR. SILL: Steve Sill. I work for the ITS JPO. I'm responsible for ITS architecture standards, and some vehicle technology, safety technology systems.

CHAIR SUSSMAN: John.

MR. AUGUSTINE: Good afternoon. John Augustine. I'm managing director of the ITS Joint Program Office, U.S. Department of Transportation.

CHAIR SUSSMAN: Next to me, in invisible form, we have Peter Appel, the administrator of RITA. He will be with us around 3 o'clock, I am told.

I'm Joe Sussman. I'm a professor at MIT, and the chairman of this committee.

Bob.

VICE CHAIR DENARO: I'm Bob Denaro, vice president of NAVTEQ, responsible for 8(s) and fuel economy, and also vice chairman at three different places.

(Laughter.)

CHAIR SUSSMAN: Ron.

MR. MEDFORD: Yes, hi. I'm Ron Medford. I'm the deputy administrator of NHTSA at DOT.

MR. VONDALE: I'm Jim Vondale.

CHAIR SUSSMAN: Jim.

MR. VONDALE: Jim Vondale, and I'm the director of the Automotive Safety Office at Ford Motor Company.

CHAIR SUSSMAN: And we don't have Kirk just yet, but I guess he'll be joining us.

MR. KISSINGER: Peter Kissinger, president and CEO of the AAA Foundation for Traffic Safety in Washington. We're the research facility of AAA.

CHAIR SUSSMAN: Thank you, Peter.

MR. CALABRESE: Joe Calabrese. I run the buses and trains in Northeast Ohio in the Cleveland Region. I'm here representing the Greater Cleveland Regional Transit Authority.

CHAIR SUSSMAN: Good. Thank you. Others around the side?

MR. FEHR: Walt Fehr with U.S Department of Transportation, ITS Joint Program Office.

MR. PANGILINAN: Hi. I'm Chris Pangilinan with the Research and Innovative Technology Administration, U.S. DOT.

MR. GLASSCOCK: Stephen Glasscock. ITS/JPO.

MR. VELEZ: Charlie Velez, Citizant Incorporated, an ITS/JPO contractor.

MR. BUCZKOWSKI: Jim Buczkowski, technical fellow and director of Research in Advance for Electronics at Ford Motor Company.

CHAIR SUSSMAN: And also our dinner speaker for this evening. So we're all looking forward to your comments. So everyone will have to behave better at dinner than we did out in Oakland, since we actually have a guest who is expecting us to pay at least moderate attention.

So let me just say a few words, kind of bringing things up to date, and then go through the agenda and then try to move things expeditiously.

We met first in April of last year and, as a newly constituted committee, we had a committee of 27 hold-overs from the earlier committee and thirteen new people. I chaired and Bob vice-chaired both generations of the committee.

And from the April meeting came some statements in areas that we thought were of particular importance for this committee to focus on as it continued to work with the JPO.

The issues that we identified were, first, multimodalism, a concern that perhaps highway domination was an issue, and we wanted to understand how multimodal ITS was. A second area was what we called the platform approach and IntelliDrive, that is, can the approach that JPO is

putting forward provide a platform for other developments?

Third was communications, and this was the question of DSRC and wireless and other modalities.

Fourth was the issue of technology, the concern that perhaps ITS in the U.S. was falling behind, technologically.

And last was the area of transformation, by which we meant institutional transformation, the notion that perhaps some new definition of relationships between the public and private sector, and a redefinition of relationships between, for example, federal and state government, might be helpful for us to more effectively deploy ITS.

REVIEW OF JANUARY MEETING

So that served, if you will, as a template for the meeting we had, then, in January out in Oakland, and now this meeting here in Detroit, and in Oakland, basically what we did is we took the first two of those areas, multimodalism and IntelliDrive/platform approach, and we had presentations on each of those and discussed them in some detail.

And at this meeting we're going to do the same thing with the second two areas, which is sort of a merger of communications and technology, and also the question of institutional transformation. So that is how this all sets up.

Now the other outcome of the January meeting in Oakland, now, you know, only eight weeks or so ago, was the formation of several subcommittees, three in particular, to look at particular areas, recognizing that this group, going around the table with different areas of expertise and interests, might find it difficult to truly engage in the detail that we need to engage in on some of these questions.

So we established three subcommittees, one that we called the Technology Strategy Committee, the second that we called the Standards and Harmonization Committee, and if I'm recalling correctly, Peter is the chair of the Technology Strategy Committee and Jim is the chair of the Standards and Harmonization Committee.

And the last of the three was Program Evaluation and Strategy, and that's chaired by Ann Flemer, who is on the phone.

And as the meeting wears on, we'll have an opportunity for those subcommittees to have breakouts to talk about what they've accomplished between the past meeting and this meeting, and the way forward that they see for the kinds of work that they will contribute to our deliberations. So that's on the agenda, primarily for tomorrow. Those subcommittees will be, I think, very important in creating some intellectual capital that can be of value to JPO as we come in with recommendations.

Now the other thing I wanted to mention is it's only about six weeks ago that we had the Transportation Research Board meeting in Washington, and I was asked to speak at the ITS industry review, or whatever they call that session, always very well attended. I was asked to speak representing this committee, to give the assembled multitude a sense of what we have learned and what we hope to learn in the future.

So I won't of course go through that entire discussion, but I gave them pretty much a rundown of what we had been up to in terms of taking a look at JPO and its programs, and more generally, the ITS national program.

And I had a few comments on what I characterized as the committee views, and I'll tell you what they are. Some of you I think were in the audience, and you know what I said, and I think

it was consistent with what we have come up with around this table. First, I had a perspective on JPO's role within the whole ITS ecosystem. There are public organizations, private organizations, and what not, and the way I characterize the committee's view of JPO's role, is that it should in fact be a leadership role, but not oppressively so, was the phrasing I used.

So they should of course have a major role in the program, and guiding the program, but certainly not dictating to anybody what should be done.

Two concerns that I raised -- again, I hope, consistent with what we discussed -- there was a concern about the rate of deployment of ITS, things were just rolling out too slowly, and there was a concern with technology strategy. That is, are they in fact on the right path to help develop and foment the development of technologies that will be in the long-run interest of the program?

So the sub-bullets on that were: Is the U.S. falling behind in its ITS-related technologies? Is the ITS program properly drawing on "cutting edge" technologies developed in other sectors, and does JPO-again this platform question -- does JPO provide a platform for development by others? All questions that we hope will come out of some of the subcommittee discussions.

And then in kind of a "win one for the Gipper" kind of a speech, Knute Rockne, and all that, I talked about what at MIT I talk about a lot, which is the idea of critical contemporary issues, things like mobility, environment, global climate change, the aging society, global competitiveness, urbanism around the world, suggesting that all of these were areas in which ITS had a role to play, and that at least my vision, not speaking for the committee here -- but my vision is that ITS should be at the center of a new vision for transportation in the U.S., and I allowed that perhaps the public was getting a little tired of the transportation profession grumbling about how the transportation infrastructure around the country is falling apart, and woe is us, we have these terrible problems,

and what are we possibly going to do about it, and suggesting that we might be better off taking a more positive perspective on helping create a new vision for transportation, at which we would hope ITS would be at the core.

So after the standing ovation died down, they went on to the next speaker and, in fact, they moved through the program in a way that I thought was counterproductive, that is, each of us spoke, in turn, with no time for questions between each talk, so you get to the end of it and nobody remembers what any of the speakers said except the last one. So there are no questions or comments. So that was my representation of our perspective at TRB.

So that's kind of where we are. If I can get this to work -- so this is the nominal agenda that we have before us. I'm making my opening remarks, and I guess I bundled within the opening remarks a review of the January meeting, and, in fact, also a review of TRB.

We will, when I finish, and after we open the floor for any questions or comments that people might have, we'll move into our first substantive session. Again, you'll recall, I said we were going to focus on two different issues than we focused on directly in Oakland.

One is technology and communications, and Vice Chair Bob Denaro will chair that, and we'll have a presentation from Walt Fehr, and then open discussion on what many of us see as a quite central issue to what we're about. We'll continue, with a break in midafternoon, through the rest of the day, discussing those questions. We'll adjourn and we'll go to the Vinology Restaurant to enjoy dinner and hear what I'm sure will be an interesting talk.

And we'll reconvene tomorrow morning at 8:00, and we'll move into the second of the key elements that we had defined in our summer report, the discussion of transformation, and whether, in fact, transformation was a worthy and reasonable goal, and what in fact we could do about it in

the context of this committee, and what JPO could do about it in terms of enhancing the institutional relationships between government, the private sector, and so forth.

Then after a break, we'll go to something we haven't done before, because we haven't had subcommittees before. We will have breakout meetings of the three subcommittees, and if you're not currently on one, we'll volunteer you for one, so we'll have a critical group in each case.

So Peter on the Technology has --remind me who's under your wing. I think Bob Denaro is. And Adam.

DR. SWEATMAN: Adam and Robin -- Robin's not here, I guess. But, Robin Chase.

CHAIR SUSSMAN: Okay. Well, she may be participating on the phone. She indicated that was a possibility.

The second is the Harmonization Standards, and Jim is the chair of that, and remind me who you have under your wing.

MR. VONDALE: We have Scott and we have Adam.

CHAIR SUSSMAN: Okay. So Adam, you're going to have to timeshare yourself somehow. And Ann, I hope tomorrow you'll be able to be on the phone for the breakouts. Joe and Joe are your two lieutenants on that. So what I would hope is people who haven't volunteered for any of the subcommittees will choose one they are interested in and participate in those discussions. We have about an hour and a half for that. We have lunch served in the room, right here. So some sort of sandwich lunch, I'm guessing. And then we'll move into report-outs by the subcommittees that will bring us all up to date on what each of these groups thinks is the appropriate area of study, and perhaps in some cases, even start working towards some recommendations that we might make to JPO, recommendations for their consideration, and, we hope, action. And Bob Denaro will chair

that session on the report-outs.

And then we'll have, following that, a wrap-up of about an hour. The plan is to adjourn by four o'clock at the latest. We will, we hope, be able to, in that wrap-up, identify some consensus on specific recommendations that we want to make. We will have -- we currently tentatively have planned another meeting in June. We'll discuss whether that's in fact viable, and what we might want to talk about at that meeting, with pulling things together for that purpose. That's what we'll do in that final hour. We will have had all the subcommittee reports, and I think, hopefully, what will emerge, is what our useful steps forward might be, and then we'll adjourn at 4:00.

So are there any questions on the agenda, or what we hope to get done during this meeting?

As I said, my perspective is it's time for us to start recommending stuff, and that we have had these subcommittees put together, so domain experts in each of those areas can begin to have at it, and we hope be able to come up with some ways forward, some recommendations in each of the areas.

But the floor is open.

Yes, Jim?

MR. VONDALE: Just a quick question on process. Jim Buczkowski is here.

CHAIR SUSSMAN: Yes.

MR. VONDALE: As you know, he's our dinner speaker. He's not a member of the committee, but if there's a person who knows more about technology and communications at Ford, it's Jim Buczkowski. Would you feel comfortable if he -

CHAIR SUSSMAN: Oh, sure. I'll look to Peter. But it would seem to me to make

perfect sense.

DR. SWEATMAN: Sure. Absolutely.

MR. VONDALE: I'd like to have Jim feel comfortable participating in the discussion.

CHAIR SUSSMAN: Oh, absolutely.

MR. VONDALE: And he may even want to move up. There's an empty chair right there.

CHAIR SUSSMAN: Well, we'll see how well he does tonight at the -

(Laughter)

CHAIR SUSSMAN: Any other questions or comments?

Don.

MR. OSTERBERG: I did have a question about the agenda. My note-taking was too slow. The third, Ann's subcommittee, what was that, the scope of their topic?

CHAIR SUSSMAN: That is program evaluation and strategy.

MR. OSTERBERG: Got it.

CHAIR SUSSMAN: Will advise the committee on overall ITS program director and performance, strategy to promote multimodal coverage, strategy to promote accelerated deployment, and the development of performance matrix to measure progress and achievements.

MR. OSTERBERG: Okay. Thanks.

VICE CHAIR DENARO: I'd just like to underscore what you said, in that this is our second meeting, and in my opinion we'll probably have a third meeting, but we've got to get toward, eventually, a consensus on a recommendation memo that we're going to send to Congress. So, you know, I think all of us need to start thinking about how do we whittle this down, now, to a manageable set of recommendations that we think are the most important things to say.

So please keep that in mind as we go through today, and what follows.

CHAIR SUSSMAN: I couldn't agree more, and I hope that tomorrow, when it gets to be 3:00 o'clock, that those will emerge in some kind of a consensus form, that we can all salute at. We're running rather close to the quorum line in this committee. We have a committee of nineteen. At this very instant we have ten, counting Ann on the telephone, which I'm told we can count. So stay on the phone Ann. Or don't tell us if you get off the phone, I guess is a better way of putting it.

MS. FLEMER: I'm still here.

CHAIR SUSSMAN: Good.

So if we're going to go into any formal votes, then we have to be cognizant of the fact, our quorum requirements, but perhaps we'll have others join us as the meeting wears on. Kirk, from here, in Michigan, I'm guessing is going to show up some time later this afternoon.

Anything else?

Okay. If not, I suggest that we move into the technology and communications discussion, and I will turn the program over to the vice chair, Bob Denaro.

TECHNOLOGY AND COMMUNICATIONS DISCUSSION

VICE CHAIR DENARO: All right. Thanks, Joe. Just to give you a little background on this, so that we're all on the same page, if you'll remember, we had discussions in our initial meeting, quite a bit, on technology and specifically communications. Obviously, there's a very heavy focus on the DSRC, because there's now greater frequency, it has a more latent capability for safety applications, and so forth.

But we all understand that if this program is to be successful, it's going to have to use multiple communications, and, in fact, last year, in some of our earlier committee work, we made

very strong recommendations on there, and JPO has very aggressively, in my opinion, moved forward with respect to embracing other communication technologies also.

And if you remember, we picked out a chart, last time, which had the basic fundamental DSRC communications, and applications associated with that, and then it had what we call the "yellow things" and in the yellow area, where lots of mobility applications but potentially more consumer-generated type application, potentially, that might be over cellular, there may be satellite links, you know, be probably other communication technologies, and at the end of the day, we certainly recognized that communications, there was a very important aspect of a platform solution here, such that all these various applications could create a rich environment where you'll have a lot of participation by people in the system, beyond just the DSRC.

So anyway, that's just a frame of what was there. What we're going to do in this session is, I think our purpose is to let's make sure we get the options on the table, what some of the opinions are with respect to various communications that should be in consideration, how they might be used, and that sort of thing. Let's make sure we're kind of all understanding that. And I think the diversity of people in this room will help in identifying that.

In fact, Jim, this might be an area where you can contribute as well, since Ford has always been very aggressive in this area. Communications is the vehicle.

And then as a product of this discussion, you know, in line with what Joe said earlier, I hope that we can get to some convergence on agreeing what is the platform of communications, if you will, and this discussion does a lot for other technologies.

So let's see if we can converge on some level of agreement on what's there, and to the extent that that might be something a little bit different than where the JPO is going, obviously, that

lends itself to advice that we would be giving.

So again, let's keep our minds on the fact that we're looking for recommendations that we might want to make.

And as far as process we'll go through in this, is just Walt's going to give us a little presentation to start with, he's our top expert in this area from JPO, and then pretty much open discussion, as he says, and I don't have any preconceived notions, so we'll just see where it goes.

So any questions or comments on that?

(No response.)

VICE CHAIR DENARO: Okay. Walt, want to kick it off?

CHAIR SUSSMAN: Somebody from JPO, John, perhaps, introduce Walt.

This is my first time meeting him, so who he is and where he fits would be helpful.

MR. AUGUSTINE: Sure. So Walt Fehr has been leading our systems engineering effort, and is our resident technical expert on our vehicle to vehicle infrastructure testbed that we have in the Michigan area. Walt previously was a support contractor to the VIIC, the consortium that technically operates and maintains the testbed.

And I can say you aptly stated, as our resident technical expert on these kind of issues.

MR. SILL: I think Walt can take credit for a few other things. I believe the number was named about 21 patents, but he also worked for Motorola previously; right?

MR. FEHR: Yes.

MR. SILL: You've been around for a while.

MR. FEHR: Yes. The vast majority of my experience has been outside of the government. I spent -- I hate to admit it -- but over 30 years in the transportation vehicle industries,

both of an OEM, and for electronic components supplier, and I'm relatively new at the office. So I maybe bring that kind of a perspective to the technology that kind of underlies a lot of the applications of this area that we're interested in, and most of my background has been in automotive electronics. So I'm quite familiar with the vehicle side of this area that we're working in.

So with that introduction, and I want to thank John for the nice introduction, I've been asked to address two particular topics that were brought up by the committee.

The first one is related to communication, and what may have been an emphasis on one particular mode of communication, that permeated our work for a while, and then the various technologies that may be appropriate for this particular area.

And in order to kick off those discussion topics, I wanted to talk about a couple of particular activities that I'm leading within our office, that are intended to address those particular issues.

And the first one, that I'll talk about briefly, is a system definition update. One of the things that hadn't been done for a while was a reevaluation, or a re-documentation of the system that enables all of the applications that we're interested in.

We tend to think of safety mobility improvement and environment improvement types of applications. But we have to pay attention to the technology, and how that technology is connected together in order to enable those things to exist.

So we're going through a fairly rigorous systems engineering process to define, or update, our definition of a enabling technology system, the thing that all of this stuff rides on, and I'm giving a little bit of an update to that.

One of the more important things is our particular interest and emphasis --and this can go

around in this update -- is paying attention to the communication that takes place away from the roadside. Earlier iterations of the system tended to focus on the mobile component, and the first point of contact between that mobile component and the fixed site of the infrastructure.

What we're realizing is it's extremely important to understand what happens once it gets off on the side of the road, and back into the rest of the applications that exist back in the initial Internet area. So we kind of take a more holistic approach, this go-round. So when we talk about the word communication, we don't mean just over the air. We mean through the Internet as well, because both are equally important in this particular arena, to have successfully operating applications.

And it's pointing out some interesting aspects of that, that we, as an office, need to be aware of and take into consideration when we make policy and other recommendations, because again, that communication through the Internet is equally important because the communication, over the air, to vehicles.

The next piece that I was going to talk about, and introduce you to, is a technology scan exercise that we're doing in order to keep us aware of, or more aware of what's going on around us, and what may be applicable to this particular sphere, and I'll point you to some information or links to information that are available to everyone in the committee to have access to, so that you can use the same mechanism that we now have available, to keep yourselves aware of what's going on around us, and what may actually cross into this particular space in the short term.

One of the big take-aways from this discussion, that I hope to impart, is that we now understand that we have a very different, much more diverse deployment that's going to make these kinds of applications that we're interested in possible, and we're trying to properly document all of

that, and properly borrow technology from other areas, in order to make this thing happen as rapidly and as quickly as possible.

CHAIR SUSSMAN: Walt, at the risk of embarrassing myself, please go back to the slide. Can you say a few more words about the distinction between what we called over the air, within the Internet, in the ITS context. I'm not sure I'm fully grasping the concept.

MR. FEHR: Okay. Most people generally don't jump to the conclusion, that any one of these applications are implemented in a fairly distributed fashion. They don't just exist in a vehicle. They don't just exist on the side of the road, and they don't just exist back in the Internet somewhere.

There are components of any one of these applications that are somewhat equally distributed throughout the environment, and the communication paths from one application component, that may be mobile, across the airway, to some point of contact on the side of the road, or close to the side of the road, back into the Internet, becomes the entire path of the communications.

So coming up with a unified method for getting information from one side of an application to another becomes very important, and earlier descriptions of the enabling technology or the enabling system for these applications we were interested in, maybe was made a little too focused on just the over-the-air component.

We missed an opportunity to properly describe it, by including the back end component --

CHAIR SUSSMAN: You're talking about standard V to V or V to I. In the way we've conceived it in the past, you're characterizing that as "over the air" --

MR. FEHR: Right.

CHAIR SUSSMAN: -- and you're suggesting that maybe we missed the boat by not

thinking about the Internet as part of the flow.

MR. FEHR: Right. The I to I part of it is also important.

MR. DENARO: Joe, I can think of a very simple example on one of these devices. You end up with a traffic map. Okay. That will have data from individual phones sitting in cars, okay, going over the air, going to a data center somewhere, which then crunches on it, then distributes it back.

He's looking at this as a whole system that'll do something like that, essentially.

MR. FEHR: Right. This component in the back office is equally important as the component in the vehicle.

MR. DENARO: And what you'll find is in fact from a cost perspective and a complexity, the back end may be the toughest part of this equation in many respects.

CHAIR SUSSMAN: I think that's helpful. Thank you.

MR. VONDALE: Well, while you're on it -- are you talking about methods of deployment, there?

MR. FEHR: Methods of deployment, and it was maybe a particular reference back to the DSRC centric view that may have been portrayed in earlier system descriptions. It's going to be much more diverse than that, knowing also that we have this back end that we have to account for, makes it a lot more rational, or a lot easier to think about more diverse communication methods between the first point of contact and the moving elements

VICE CHAIR DENARO: Walt, you're going to get into also -- I mean, part of the model we're seeing evolved here for utilizing location is in some ways looks like an absolute, okay, and so if we make this open enough, you can envision that it's not just something prescribed on a back-end

server but there's actually people hopping in and creating things, and so forth.

However, in the vehicle -- and maybe in the phone environment, we don't care what shows up on the phone. Have at it. You know, people can decide to use it or not. In the car, we do care if it shows up there. Is part of what you're talking about also management of that ecosystem?

MR. FEHR: Yes. Very much so, because finding out that the communication -- I hate to almost say this -- is less important than the management and oversight capability that's built into this thing, communication will happen through a variety of media, some of them, you know, chosen because of the characteristics and whether they support broadcast or point to points. But the management and oversight needs to be consistent, no matter which communication media are used, whether it's over the air or through the Internet, because of those very reasons.

We have, in this particular arena, have a interest in having some kind of management and oversight capability, so that there is an ability to prevent it from being, you know, a "wild, wild West," where anybody with a computer in their basement can create stuff, and it may not be appropriate stuff.

So that's one of the more interesting things that is becoming very clear to us, is how do we structure this management and oversight capability within the thing, and so a lot of our work includes the communication but also includes that component, and that actually may be a more appropriate simple for us, rather than picking and choosing, you know, details of implementations.

So with that, I was going to give you a little bit more of an idea of this exercise that we're going through. We're about halfway through it. So this looks like a PowerPoint presentation because it hasn't gotten to the concrete ends of it yet.

But in order to go through this in a fairly rigorous process, we're using a fairly standard

systems engineering approach to coming up with what will ultimately be some recommendations for an architecture for this set of technology that sits in the middle of all of our applications.

We started the process by recanvassing the user communities. We all know a fairly large number of stakeholder engagement activities, starting last fall, going through the holiday period, where we had several open meetings in a number of different venues. We invited as many of the stakeholder community groups as we could to participate in these, and through those stakeholder engagement exercises, people had a chance to attempt to articulate their needs. What do they need this thing to do?, not necessarily how are they going to build it, or what do they want to buy. But what do they really need it to do?

So we listened to a lot of that kind of interaction with the stakeholder communities, and are going through the process of sifting out the internal needs of what this technology needs to support, and we're right at the process where we've developed the initial draft of a concept of operation in the system, which will highlight that particular short list of needs, we boiled it down to about 23 or 24 fundamental needs that the system has, and it's usually a good indication that you're on to something, if you can count all of the user needs on your fingers and toes.

If you get more than that, you're into installation or design details.

CHAIR SUSSMAN: You said twenty-four?

MR. FEHR: Yes. I actually have six digits on each of my -

(Laughter.)

CHAIR SUSSMAN: Let me just break in to ask if you could just say a word or two about who these users you canvassed were, not by name but by sector.

MR. FEHR: We attempted to involve all of the traditionally transportation stakeholder

communities, both from industry and from Government, and from academic types of institutions. We tried to bring in some new potential stakeholder communities that may ultimately take advantage of this system, such as the insurance industry and telecommunications industries.

And we like to think that -- it wasn't just highway people we talked to. It was as many of the user communities that we could possibly think of, and one of the more noticeable outcomes of involving that many different diverse elements into the mix, is that you'll no longer see us refer to vehicles. They're mobile elements.

Because "vehicle" is a somewhat confining definition of these things that move around, and participate -- well, have a marked interest in the transportation arena. You know, there are humans walking around, which are vehicles that participate in it, and all sorts of different things. So we're trying to stay away from the V word at this stage of the description, because we don't want to confine ourselves to thinking, you know, these four-wheeled things that people drive around.

CHAIR SUSSMAN: When we come, for example, to state departments of transportation, transportation departments in large and small cities, public transportation operators -

MR. FEHR: Yes.

CHAIR SUSSMAN: These are the kinds of people -

MR. FEHR: Those were the kinds of different people that we had involved, and that's where a lot of the -- I wouldn't call them new ideas, but new appreciation for old ideas, come from, is that diverse group that we actually engaged this time.

Last time, the efforts may have been a little bit too focused on the people that operate roadway networks and people who don't like vehicles. That's one of the criticisms of the previous work. So we purposely tried to -- we involved all of those but we tried to involve the rest of the

transportation world as well, plus things that are sometimes considered on the periphery of the transportation world.

MR. BELCHER: Joe, if I could just add to that. We helped pull people together. As you said, we involved the telecommunications industry, so telephone companies, other information providers, public safety groups, both the police, fire, other first responders, included, reached into the defense community, and so it was a pretty -- it was a much broader cut than it's been before. I think Walt's exactly right.

MR. VONDALE: You're talking about then switching to something that starts with the word moving?

MR. FEHR: Yes.

MR. VONDALE: I guess my question is why does it have to be moving, because we talked, I think last time, about things like parking meters, that might initiate the initial communication, cause people want to know whether a parking place is open, or a parking structure.

Why does the --

MR. FEHR: That particular device would fall into the field box on this particular chart. There are things that --when we are talking about the things that don't necessarily move, or don't move often, there are things at the edge of the transportation arena, like your parking meters, or some of the more classic ITS kinds of elements.

And we no longer call it roadside equipment, because, again, we wanted to get away from maybe a stereotype, or a confining connotation. But things near the moving elements are also envisioned a part of this.

And so you see, three main groups of users of the core system, there are the mobile

elements, which are the things that typically move around, and they can be vehicles, or they could be people that interact with vehicles, or people that get into vehicles, that kind of area within it.

There are the field elements, which are the near-to-the mobile elements. And there's what we call center, for lack of a better word, stuff that exists far back into the traditional Internet. And then there's a certain human element to it as well.

I had mentioned earlier, that we're beginning to become very cognizant that management and oversight are one of the more important aspects of this thing that we're working with, and we have to consider that there needs to be something that has some kind of -- gives some kind of direction to this thing.

All of those things feed into the core system, and the core system's main objective is to define the interfaces between those elements, so that information can flow to these distributed application components, that could exist in any or all of those different locations.

So immediately -- and it's kind of a blurry line right now, between the core system and this layer of communication, the thing that actually enables the application components to interact with each other.

And then sitting on -- it's kind a hard to give a depth perception from this particular diagram. The applications then sit on top of that and make use of the underlying elements. The communication, media, then the core system which defines what information, and how that information is marshaled through the communication loop.

DR. SWEATMAN: Walt, can you say a bit more about what you characterized as a center. I didn't quite get that.

MR. FEHR: That was one of the things that we struggled with most. Understanding the

applications exist in a distributed fashion, some of which exist out in the traditional internet. Those exist at a center somewhere, and if you can think of a better name for that particular box--you have a chance of winning our Name The Box contest. We spent hours trying to come up with an appropriate name for that. But it's things like what Adam does for a living.

DR. DROBOT: Yes. So let me maybe again sort of step back and ask a question the following way.

Now when I look at what you have put out there, you have a number of fundamental functions, one of which is communications, one of which is storage and retrieval of information, one of which is computing of whatever form it has. The actual software that represents the applications that you want to have, and the last one are the interface devices that are either machine to machine, or machine to human being.

So those are to be sort of, you know, the five ingredients in the kitchen. They can cook up a meal from. Okay?

MR. FEHR: Right.

DR. DROBOT: Okay. You know, and that would be, I would say, sort of a technology view of your system, okay, that those are the top-level ingredients. Okay. When you're approaching this as a construct, okay, you know, what I find is that there are elements of those ingredients splatted across almost all the boxes that you have.

MR. FEHR: Yes. What we're finding is that this thing that we're talking about is not a physical thing, it's a logical thing, and that's one of the hardest things for people to grasp right off the bat. We're not really talking about a specific isolated nuts and bolts set of equipment, and the applications that run on it. Those things rarely exist in modern days. Probably one of the last

instantiations of a completely dedicated transportation application enabling system was the old railroad signalling things that relied on point-to-point wiring from every switch to every indicator device, and it was completely self-contained and completely isolated from everything else. That was back in the early 1900's. Since then everything is becoming more and more a logical construct that sits on top of a lot of other things.

So this may not be a completely satisfying, or -- you know, the easy thing to bite off, because, you know, some people have complained that, well, we just defined the internet, and to a certain extent--

DR. DROBOT: You have.

MR. FEHR: --they're correct. This thing that we're talking about is a logical element that sits on a lot of existing elements already, and what we need to then figure out is what the important thing that are--that make it unique for what we're talking about, and when we get into the requirements description and the architecture proposal phase of this, we'll go from, it does everything to what it specifically does to support the applications that we're particularly interested in.

So we're beginning to put bounds on it when we start to articulate specific requirements for it, and then that leads to a logical architecture, which then somebody can build, and when we find out that we get to the point where somebody builds it, we're probably going to find out that the biggest thing that has to be built from scratch is the management and oversight part of it. That's what--is about the only thing that doesn't exist in some form or other already.

There may be some sprinkling technology elements to take care of particular needs, or requirements that are finely articulated, and that's where our old friend, 5.9 gigahertz DSRC might

come in. But people will see how that fits into the whole of this management and oversight thing, sits on top of it, and everything else already exists, so you don't have to build it, you just have to understand it and properly configure it and use it.

So those are some of the interesting things coming out of that particular activity, and very shortly, we're going to be circulating the concept of operation, which has the detailed articulation of the user needs in it for public comment, and we'll make sure that this particular committee gets a copy of that, and we would love to have detailed comments from, you know, such as yourselves, or people in your organizations when this goes out, to make sure we're getting closer to the mark.

Sometimes, those of us standing in the middle of it can't see it.

CHAIR SUSSMAN: So the idea is that this--back on the previous one a little bit.

MR. FEHR: I'm sorry.

CHAIR SUSSMAN: That you will replace the existing documents we call ConOps with this new definition, the other--the earlier one is null and void.

MR. FEHR: It's not necessarily null and void, but we've all matured over the last four years or so, when that exercise was done last, so it's high time that it be updated.

We're going to find out--there were some very useful things that came out of that previous definition, and some things that were maybe overlooked in that previous definition. So it won't be completely unrecognizable when you see it next.

CHAIR SUSSMAN: So you are characterizing it as some sort of continuum--

MR. FEHR: Yes.

CHAIR SUSSMAN: --that it's moving along a smooth path, not a disruptive step-wise change in how we're going to operate?

MR. FEHR: No. I see it as a continuous improvement that it's going through. Like I said, our understandings are getting much more mature now. We learned a lot through previous exercises that we've done. We know the parts that we want to keep, and the parts that need to be improved or expanded upon, or actually, and finally included in this definition.

So you're going to see it growing. It isn't throwing it out and starting over.

VICE CHAIR DENARO: I think a particular challenge is that, you know, these don't last long and was put together four years ago and now and we've learned a lot since and there's a lot to consider.

We're going to wait 12, 15, 20 years before we have sufficient penetration in automobiles, and so forth, to actively deliver on some of that promise.

So whatever we're coming up with here, you're coming up with there has to be a system that, on one hand, could provide to implement something today, so in 2014, when you get the pieces working and be productive--but it has to have legacy to be operating 20 years from now too.

And somehow, I suspect we can't predict, very accurately, what communications and internet might look 20 years from now.

MR. FEHR: Yes. That's why we--

DR. DROBOT: But you want to make sure that you're not so dependent on it, and that in fact, when you look at--I think what Walt, you know, Walt has presented, there really are some underlying, long-lived, well-accepted interfaces. So when you look at something like the internet as a set of protocols, I mean, that's been around for some time and it doesn't seem to be going away, okay, and it gives you the convenience of integrating lots of other things at a much, much lower cost than in the past. You know, very valuable.

MR. FEHR: Yes. that was one of the main reasons for definitely separating the idea into layers. That was probably one of the most useful things learned from--

DR. DROBOT: Could be composition.

MR. FEHR: --that internet example is that separate the message from the medium allows you to change both of them independently, and as things become available, people will invent new things, you can add them in, as appropriate, and the whole thing can continue to advance, and in hindsight, it looks obvious that you need to have something like that, but it isn't always that easy to see when you're looking at a blank piece of paper.

VICE CHAIR DENARO: I'm not sure what 9G looks like yet, so--

(Laughter.)

MR. FEHR: It's fast. We're coming up with things to soak it all up faster than it's becoming available.

A couple of the key things I wanted to point out from this exercise, again, this decomposition into the layered, is that we understand some of the unique communication patterns, trying to separate it from communication media, but determining how communications need to take place, and this is one of the more useful things that were learned by some of the previous exercises, and it leads to some unique technology that may be needed to implement this, is that a lot of the communication that takes place, particularly amongst the mobile elements, and primarily vehicles, if you think vehicle to vehicle, happens in a broadcast mode.

The sharing of situation information at a very rapid rate between parties that don't have established relationships, and all the rest of that thing, will lead us to some unique technology in that particular area, because there aren't many technologies that accomplish those kinds of

communications.

So by understanding that the sharing of situation information amongst mobile elements, they're fundamental to all of the crash avoidance kinds of applications, and that's done very efficiently in a broadcast fashion, and when you do those kinds of things in a broadcast fashion, in the kind of environment where we have elements coming from unknown parties, if it leads to some interesting requirements for that particular communication medium, so we're finding that broadcast fashion of information, or situation information exchanges, is one of the fundamental communication modes that take place, both from mobile element to mobile element, vehicle to vehicle, and from roadside to vehicle.

There's another broadcast communication of situation information, and it takes place from the roadside to mobile elements.

A classic example of that is at a signalized intersection, where a traffic signal controller is broadcasting to any mobile element near it its particular situation, what phase each one of the lights are on, and all the rest of that.

That's done very efficiently in a broadcast fashion, where you want to get that information to any available listener, and doing it simultaneously is a very efficient way of doing that.

So we have those two broadcast kinds of, portions of the communication task. One that's intended from mobile elements, and one that's intended from fixed elements, and everything else boils down to a point-to-point communication. That's the only other kind of communication that takes place in this particular system that we're working on, from a specific device to a specific device, and that can take place anywhere within the system.

DR. DROBOT: So a question, Walt. There is broadcast, where everybody gets it.

MR. FEHR: Right.

DR. DROBOT: What I don't see up there is multicast, where you have the ability to tailor it, so a subset of everybody proximate gets it.

MR. FEHR: We were quibbling over the word broadcast because--

DR. DROBOT: Cause it's, you know, multicasts and broadcasts are very different, essentially.

MR. FEHR: Right.

DR. DROBOT: Okay. And it would seem to me that multicast is actually central to what you're trying to do, in some sense, here.

MR. FEHR: Yes. Again, this is another one of those Name the Box contests that we have going on, choosing the right word for that, but the idea is getting information from one source to many other users, effectively and simultaneously.

DR. DROBOT: Yes. With some control of who the users are.

MR. FEHR: Right. Exactly. With management and--

DR. DROBOT: And broadcast usually doesn't have that. That's the only point.

MR. FEHR: It's tricky but it can be done. Establishing trust relationships between communicating partners, whether it's being communicated in a broadcast fashion, or in a multicast fashion, are important in this particular arena. The listeners have to be able to trust the source of the information, whether it's coming from a car that's approaching you with a closing speed of 120 miles an hour, or if it's coming from your traffic condition advisory service, whatever that might be.

You have to trust the source of the information, which leads to some very tricky design problems in the mobile to mobile arena, and that was one of the more valuable things that we

learned out of a lot of this past work that we've done, is that we think we've actually come up with a way of doing that, instantly establishing a trust relationship between anonymous communicators.

Nobody else on the planet knows how to do that, but we think we do, and if you even talk with people who have high levels of need for establishing trust relationships, and communicators, military, people like that, they never have a situation where it's between anonymous communicators, which is one of the things that we're trying to design into this particular thing. So it brings up some interesting engineering challenges for those of us who enjoy those kinds of things.

CHAIR SUSSMAN: Did you say you think you've solved that issue?

MR. FEHR: Yes.

CHAIR SUSSMAN: So what's the silver bullet?

MR. FEHR: I could spend some time delving into that particular topic, because it is one of the unique things that is baked into the design of 5.9 gigahertz DSRC, it's the ability for, in a broadcast fashion, being able to authenticate, verify the transmitter before--you know, by the receiver.

And the 5.9 gigahertz DSRC, if I can diverge a little bit from my prepared remarks, had this guiding principle, anonymity by design. It's one of the few communication media over the air, that doesn't present a permanent ID to available listeners. It's a constantly changing ID. So that allows the mobile elements to be effectively anonymous.

They never show up with the same MAC address in that the physical media, for example. They never have to reveal their identity until they're in a situation where there's proper safeguards to protect their identity.

It's not like Bluetooth, where people made a business out of sniffing your cell phone

Bluetooth MAC ID, so they know how far you've traveled and all the rest of that kind of stuff.

It's not like a cell phone that's constantly being tracked by the infrastructure, so it knows where to place an incoming call. There is no way to track a specific 5.9 gigahertz DSRC global transmitter, because there is no permanent ID that's presented. So we had to come up with a mechanism that could then be able to authenticate messages that come from these anonymous sources.

As a receiver of a vehicle to vehicle basic safety message, I want to know if it's coming from a legitimate vehicle and not somebody that's spoofing it, or altering it, or doing something either intentionally or unintentionally wrong with the information they're sending to me.

So we've come up with using adapted standard cryptographic processes to do that, and in order to be able to allow that to happen, it points doubly to this need for the central management and oversight element of the system, in order to establish the fundamental trust relationships, which then manifest themselves in these cryptographic security credentials that are installed in all of the devices, so that a random device can receive a message from another random device, and effectively instantly authenticate that it comes from a legitimate device, and believe and use--

DR. DROBOT: So a public key or--

MR. FEHR: It's a variant of a public key infrastructure.

DR. DROBOT: Okay.

MR. FEHR: It's been tailored for that particular set of user needs, and the requirements for that communication environment. And everybody's interested in how we're doing that. That's another one of the novel things that's come out of this work, is that nobody's had to deal

with that kind of a situation before.

It's important that everybody understands, that we've taken very seriously this expressed need by the user community of privacy by design, and we wanted to learn from some of the mistakes that have been made in that kind of an area, and do things differently, so there's a reasonable chance that the privacy of individuals using that particular technology are preserved.

We don't do something that inadvertently exposes them, or allows them to be tracked, or other things that aren't less desirable.

One of the other useful things that's coming out of it, in hindsight, it's kind of an obvious thing, is that we want to come up with unified processes for data exchanges among all of the application components. That's one of the standard things that have enabled so much to come out of this thing that we now know as the internet, was that the message was separated from the communication medium, so that a message could travel from one point of it to another point of it, and not have to be changed all along the way. You effectively define a payload and then transport that payload by whatever means are appropriate or available, and it gets from one application component on one end, all the way to the other end, and it doesn't have to be changed every step of the way.

So that's one of the other important aspects of the core system are going to be defining the data exchanges that take place, and that becomes, then, the subject of either open or private or however it manifests itself, standards activities.

I already touched on the third bullet there, the unified process for establishing trust relationships, checking the ownership or the privacy of information that travels independently of the communication medium. There are also going to be other important aspects to this, particularly

now that we're paying a considerable amount of attention to this thing out on the fixed side, the internet, and how do you establish those trust relationships and protect privacy as stuff travels all the way from a source in a mobile element, all the way through to its destination somewhere out in the internet, and do it in a unified fashion, so that again, information can come from anonymous elements and travel to a central location and be trusted when it's received?

So that's going to be a significant area of work that we're going to undertake in this area. It's maybe another one of the areas that we're actually meeting a lot of other areas interest.

The other central element--and this is one that we struggled with quite a bit--was the need to have some kind of a central ability to manage and broker certain data, and this data is generally related to the overall state of the system. Those of us in transportation tend to think of this as information about how global elements are flowing through the transportation network--but when we were going through this ConOps walk-through, we did a mental exercise for primarily transportation-oriented people.

Just imagine that instead of working under contract with USDOT, they were working under contract with USDOE, the Energy Department. They have a very similar situation, the integration of mobile elements with their fixed infrastructure are cars.

So the thought problem that we went through is, if we define this underlying, enabling system, would it apply to that context, as well as our transportation context, and yes, it does. It turns out they have a lot of the exact same needs. They have some probably unique needs that are actually going to need requirements, but their underlying needs are the same, and so including this need to have a central data manager and broker, they need to know the state of their system as well, what the multiple elements contribute to their knowledge of the state of that system,

just like we, in the transportation arena, tend to think of probe data.

You know, the state of vehicles as they operate through the roadway network, they need to know the state of these mobile elements as it operates through the energy network as well. As, you know, energy is consumed, may help them predict them where they're going to need to have resources available when those mobile elements decide they need to connect.

So I think we're coming up with some very useful core ideas about the underlying technology, and how that technology is organized, and particularly how it's managed in the center of all of this through how do we enable these applications.

So again, that exercise is ongoing right now, we've reached the stage in the process where we've gotten a reasonably good draft of that concept of operation, and we're about to circulate that.

The next area here, if I can shift topics now, is to talk about this technology scan and assessment task that we have ongoing within the office now.

And again, it's intended to keep us informed on what's happening around us, what may be coming in to our sphere of interest in the near term, maybe four to five years from now, what's going to become available?

So keeping people in the office, more up to date than may be practical for individuals to do. So we have a directed effort in this particular area.

We have engaged with some of Scott's people, to do this particular task for us, and they are on a fairly regular basis bringing their findings in, and make those findings available.

We're particularly interested in their assessment for the transformative technology. What's about to change out there, that may change the way we think about implementing some of

the things that we're doing? So they've been doing a pretty good job of making sure that we don't miss things that we need to keep track of, keep abreast of.

And one of their reports is available, and some paper copies are available you can take a look at the break, or whenever, and scan through what they found, and we can make those reports available as well, and electronically, either on our website or through other distribution channels, because it's useful information for everybody to keep track of. We don't have to have, you know, the technology rug yanked out from under us, and not know that it's coming.

I picked up on one of the particular pieces that came out of that particular scan, because it kind of highlights that the stars are starting to align, to make this underlying technology available to actually implement a lot of the applications that we're talking about.

And one of the things that we were finding very desirable about our system is the separation of the medium and the message, the ability to transport a packet of information from one application component all the way to the other end of the system, to the other application component, without changing it, and 4G cellular is particularly well adept at doing that because it's a completely IP-based kind of a communication. It very much facilitates that idea of being able to transport something through it, without having to change it as it goes from one physical medium boundary to the next. The last thing you want to have to do is have everything stop, be unpacked and repacked, as you go from one technology boundary to another. As you go over the air to the roadside, back into the internet, you want that payload to just travel right through, and that's one of the nice aspects, a very nice aspect.

They finally have figured out that voice and a telephone call is nothing more than a data exchange. You don't need a particular special technology to transport voices or data packets.

Anyway.

So some interesting outcomes from that, and again, a lot of these enabling kinds of things are happening around us.

Some other things from, findings from the, in the technology scan, are we're not just analyzing or observing technology, but some of the phenomenon around technology. Such things as, you know, telematics business models, and this app store phenomenon that has taken off with some of the smartphone, the advent of smartphones, how will those kinds of, what are effectively business processes, influence what we're doing and how we're doing it?

And we're trying to learn from what people have done, and get to the secondary and tertiary kinds of concerns that we may have, that maybe make it a little more complicated than just wholesale instantly adopting something from another arena and bringing it directly into our arena. I brought some samples along of--one of the things that we're investigating, and keeping ourselves abreast of, are, you know, these things that are known as smartphones.

So through a contract mechanism, we accumulated one of every make of all of the latest smartphones with location-sensing ability in them. We got them from HTC and Apple and Motorola and BlackBerry, plus some of the PND devices, because some of the secondary and tertiary things become more important to us than the ability to run an app.

We need to know is the positioning service available in these things good enough to support some of the applications that we would like to do, or are some of them better than others?

And also certain considerations that maybe aren't primary considerations for the users of these things, like the battery life. If we run one of our applications, people have an expectation that their phone will last for a day before they have to charge it again.

But some of these location-based application things require that the thing effectively be plugged in all the time. So when we require people to change their usage patterns, to be able to use some of these kinds of things, and then is there any ability, since management and oversight of our system has become very important to us in this, you know, wild, wild west that we have out there of app stores--is there any ability to influence what people do and manage what people do with these kinds of things so that we have an opportunity to prevent people from doing things that may be counterproductive or inappropriate. You know, the driver distraction thing is the big concern right now.

So we, in the office are, you know, getting experience with that kind of stuff, in a hands-on fashion, as much as we can so that we keep abreast of it.

Another thing that we're investigating is, you know, accelerating the introduction of these particular applications that we're interested in, particularly the safety kinds of things, and so people are asking, well, can the after-market industry do it?

And some time this summer, you'll be able to go to Best Buy, pick one of these boxes off of the shelf. It's a complete OnStar built into the inside rear view mirror. You take off your existing inside rear view mirror, you install this inside rear view mirror. You've got OnStar. It's got everything inside of the mirror.

And this is an example of how people are beginning to investigate the after-market arena, to accelerate the introduction of a particular useful bit of technology and the applications that that technology supports.

So, you know, we're trying to figure out how they do it, see if, you know, whatever they know how to do could be applicable to accelerating the introduction of this particular

technology. Do we have to wait for it to be deeply embedded in the thing, in the mobile elements, as they come along, or is there a viable way of doing that? These people can figure it out, and this is, unfortunately, an empty box. But I saw some of their stuff when I was down there this morning, and it looks like they're going to have a reasonable product when this things becomes available.

CHAIR SUSSMAN: So when you put this on your rearview mirror and you run off the road, who are you talking to?

MR. FEHR: OnStar.

MR. AUGUSTINE: Cross-country.

MR. FEHR: Yes.

MR. AUGUSTINE: After-market subscription.

CHAIR SUSSMAN: So you're talking to the same center that someone with a Cadillac--

MR. FEHR: Yes.

CHAIR SUSSMAN: --would talk to, if you've got your--

MR. FEHR: Yes. So I can have OnStar in--

CHAIR SUSSMAN: --'78 Chevy.

MR. FEHR: --my 1998 Oldsmobile, if I want it.

MR. BUCZKOWSKI: Since you opened a can of worms, you know, if you want to be really provocative, OnStar should be giving the hardware away for free. That's the only way it's going to work, is for you to base this--the only way it's going to work is for you to pay 16.95 a month.

DR. DROBOT: A subscription; yes. Absolutely.

MR. BUCZKOWSKI: I mean, those phones, they're probably, you know, over the counter, without a subscription, average between 400 and \$600. I don't believe any of you paid, that had the smartphone, paid \$600 or \$500 for your phone, heavily subsidized by the carriers because you sign up for a two year contract.

That's fundamentally a very important point as we go forward on these things, that the method, the communication method, the channel, and how it gets paid for, and subscriptions are something customers are very sensitive to.

DR. DROBOT: So the question is what does it really cost and what are they charge you. Those are two different things, really.

MR. MEDFORD: It's also sort of separating like what may be required to be in the vehicles, but a possibility of retrofitting old--you know, that's your point, I think.

MR. FEHR: Yes.

MR. MEDFORD: How you do that, no one quite knows, but I think it's a concept in the way, maybe, to do the fleet in a more rapid way, and be part of an effective mechanism we're paying for, so--

MR. FEHR: Yes. So whether or not we agree with their business model, or whether we find that substantiation useful or not, they figured out a way of attempting to use the after-market, not that they're getting that deployed more rapidly then, waiting for a vehicle from internal.

So we're trying to learn, you know, how do they connect this thing into a vehicle electrical power source effectively, you know, details like that that are the secondary, maybe the "hardest nut to crack" in any kind of a after-market kind of a strategy. How are they dealing with it? Can we learn anything with what they're doing?

And regardless of whether you like the idea of telematics, and the services, and what it costs, and all of that, how do they do it? And can we learn anything from how they did it?

CHAIR SUSSMAN: So this has been very interesting. I've learned a lot as you've gone through your discussion. I'm trying to get my arms around what the end-state deal is. Is what you are aiming for a new ITS architecture, that will now be the architecture model that will drive us for the next decade, or whatever it is?

MR. FEHR: Well, for the next five years or four years, however long it is.

Well, we're anticipating that we probably need to do this definition assessment maybe more often than five years or so, because it was a very beneficial exercise to go through because it pointed out significant areas within the suite of technology that we need to pay attention to, and we hope it gives a lot of--suggests direction to people who actually want to design elements of this thing, and begin to implement elements of this thing. So we'll probably do it a little more often, so that it becomes a living thing.

CHAIR SUSSMAN: So when might, in the best of situations, might we be able to see what this architecture is, where you're waiting to--

MR. FEHR: The July timeframe is when--

CHAIR SUSSMAN: Excuse me?

MR. FEHR: The July timeframe of this year.

CHAIR SUSSMAN: July of this year?

MR. FEHR: Yes. It's a fairly rapid process to go through, maybe encumbered by our need to have it vetted by people all along the way. If we didn't bother to do that, we could have come up with a new architecture a long time ago. But we want to do this in such a way that, all

along the way, we incorporate as much of the community's insight and understanding, make sure you don't make as many mistakes as we might have made in the past.

MR. KISSINGER: Walt.

MR. FEHR: Sir.

MR. KISSINGER: It seems inherent in this, this flexibility is--the flexibility is what we intended with to do with our approach, including allowing flexibility for initial applications, perhaps some that we haven't even thought of yet.

MR. FEHR: Right.

MR. KISSINGER: And what's the implication of that for JPO and maybe even this committee--I mean, is there still a--is there yet another sort of arbitrary definition on top of all of this, that limits what we're working on? Or have we just sort of eliminated that?

That sort of unlimited--are the applications, theoretically, unlimited, that technically, JPO is concerned about? Or are you putting priority on some subset, or--

MR. FEHR: I think that's where some direction from the back end of the room--

MR. AUGUSTINE: Maybe I can jump in a little bit on that. I mean, that's an excellent point. I think Walt has done a good job of describing sort of the overall systems engineering process, and the flexibility in trying to think about a managed, graceful evolution, and separating the different layers. Key to all that is we have multiple goal areas we want to support.

However, from a USDOT standpoint--I'll defer to Peter and Ron--the safety is the number one goal area, and one of the critical areas that we're trying to look at is the vehicle to vehicle and vehicle infrastructure for safety, because that is a fundamental government role in how do you define those safety requirements.

So what we're trying to do is position ourselves--and another distinction I want to make is what Walt is really talking about is the architecture for what we're talking about in terms of mobile and fixed communications for safety, that can be leveraged by anybody else for mobility, environment, and iPhone application store. Anybody in the basement who has a good idea. We don't want to limit that.

But that's not our main focus. Our main focus is the safety. However, all of that data, we know, can be used for mobility and congestion reduction, and capacity and efficiency, and business cases.

So we're trying to balance this huge universe while maintaining the focus on the safety, as we believe that is the fundamental goal area that we, as the federal government, need to support. But with that, I'll turn it over to Ron if he--

MR. MEDFORD: And that we really want business cases that sort of undermine the safety in what we're saying, that's kind of a thing we've expressed a lot, that I think there--I think there must be many, many applications that have already been thought of by everyone, that could be, you know, enhanced for the vehicle owner and the passengers, and to the extent that it doesn't undermine safety, I think that's great.

VICE CHAIR DENARO: But it's hard to separate those completely, because when you think about--let's just take a piece of that--you have a vehicle with crash avoidance. If we have to wait for new car production, for that to happen, we're going to wait a long time, and a lot of people are going to die in the process.

If, on the other hand, we find both products and services and business models, that allow us to get into the after-market faster, such as what Walt is showing there, and that drag with it

the safety component, then we're going to achieve that, you know, mass adoption a lot faster.

So, in a sense, having applications that are exciting and interesting to consumers, it's going to help us all.

MR. APPEL: And I'd agree there, and I would just not characterize it as the one hand versus the other hand. It's not an either/or. It's a both. End that the core of V to V and V to I communication is what's going to come out from the OEMs year after year after year, from X point forward, and that will get us up an adoption curve that looks like this.

And we might say, well, we want the adoption curve to look like this, which is why you leverage other things. And what I really say on that is a curve like this is a whole lot better than what we've got right now, which is like this. And any time we start--but seriously--any time we start going up that slope, we build momentum, because every additional set of vehicles that have this capability makes the value proposition for the rest of them that much greater.

MR. AUGUSTINE: And one other distinction I would like to make is, just so people don't walk away with confusion--when Walt was talking about the architecture for the vehicle to vehicle to vehicle infrastructure technology, that is different than the architecture and standards, the national architecture that Steve Sill manages through that program. They're connected, related, but do you want to just make sure--

MR. SILL: Yes. Keep in mind, there is a national ITS architecture that is legislatively mandated, that we have it and we maintain it. The vehicle to vehicle, and vehicle to infrastructure communication capabilities are two individual links on that architecture, that also covers center to field, and center to center, the many other things in the traditional infrastructure world of ITS.

And so this architecture is a piece of the national architecture, and it's at a much higher level of detail than the national architecture. So it's not so much that they're separate, but it's important to understand the distinction, where one fits into the other. That's all.

MR. FEHR: It's a logical element that sits on top of existing elements in a lot of different ways. It's confusing--

MR. MEDFORD: But, you know, you already have kind of a lesson. You know, what's going on now with vehicles, in terms of connectivity, is like huge, it's exploding, people want it and it's like the New Frontier, and no one knows exactly, you know, what the consequences for-- we're worried about safety of course, and it aptly opens up the whole vehicle for many applications, and this could be--you know, this is going to be exponentially different than--greater than that, I think, because of the various kinds of information that's going to be coming to the vehicle, brand new, and not otherwise available without this technology.

So it's going to be both a great opportunity and a huge challenge, I think.

VICE CHAIR DENARO: I'd like to make a suggestion. I'd like a break now. We're within a few minutes of when we scheduled it anyway. And now Peter has joined us. Maybe when we come back, Pete can say a few words, and then we'll continue the discussion as well. If you don't mind, let's do that, and be back, ready to roll, at 3:30.

BREAK

(Whereupon, the above-entitled matter went off the record at 3:18 p.m. and resumed at 3:38 p.m.)

REMARKS: PETER APPEL, RITA ADMINISTRATOR

VICE CHAIR DENARO: We have a little modification of our agenda. Peter has joined us now. We're going to ask him to say a few words, and then after he does, we're going to take the opportunity of having Ron Medford here, from NHTSA, and, you know, obviously closely tied into everything we're talking about, and Ron agreed to say a few words for us too, and their perspective, and what their role is. And we'll get an opportunity to interact with Ron as well.

So with that, I'll hand it over to Peter.

MR. APPEL: Thank you very much, Robert. It's great to be here. I've been in the Detroit area in the morning as well. I had three very, very good visits to automakers here, starting with visiting Ford, and Jim Vondale, and his team hosted me, and I brought along Valerie Briggs and Mike Schagrin, and we had very, very substantive discussions on what some of the automakers are doing in the safety, and particularly in wireless, vehicle to vehicle safety, and it was very heartening to see, not only the amount of progress being made, but the amount of enthusiasm for the kinds of technologies that we're all talking about here.

So that was a good discussion. Taking a step back, I missed the last advisory committee meeting on the West Coast. Rob Bertini was representing me there. Rob will be joining us later today, for this evening and for tomorrow.

But before that, you know, at your previous meeting in Washington, I conveyed to you the importance we place on this committee as part of our program.

What we all realize in the ITS program is that we have a range of objectives in our program, but certainly, the biggest and most visible of these objectives cannot be achieved unless we have advice counsel and coordination with a broad range of stakeholders, of which you represent many. We need your input, we need your advice, and we listen very, very carefully to it.

One of the things that I talked about with each of the automakers I talked to this morning, and I talked to about with, with the ITS Joint Program Office team, lately, is one of the ways we want to think about, you know, our hallmark program of the vehicle to vehicle and vehicle infrastructure wireless communication for safety--one of the ways we want to think about it is by placing ourselves several years out in the future, 2025, and imagine we're in 2025, and just bought a car, driven it out of the showroom, it's equipped with DSRC, safety applications, perhaps some other application, and you drive down the road in that car, and you are benefiting from the existence of DSA and DSRC, and wireless in your vehicle, and the existence of that capability in some proportion of the other vehicles on the road. But we don't know what that number is.

But let's say that number is a significant number that will provide you some benefit. Whether it was 30 or 40 or 50 percent of the other vehicles on the road isn't as much the issue, as there is some substantial set of vehicles on the road with you, in 2025, that share this capability, which means that are you are getting real crash avoidance happening, you might be getting some real mobility information happening you might be getting some smart intersections helping you be more efficient, and the like.

And you take that scenario--and it's not a be-all and end-all scenario. Maybe we haven't yet covered every single mode of transportation. Maybe we still haven't achieved the penetration rate we want. But we're at a point where it's working. You say, okay, we're sitting in 2025, we're at that point where it's working.

What did we have to do, in the previous 14 years, to get to that point?

What things needed to have happened?

And a lot of the things that need to happen are happening now. We're planning our

safety pilot to do a test of the technology. NHTSA's going to use data from that and from other things to make various regulatory decisions in the next two or three years.

We're having policy discussions involving governance and how the kind of back office of this communications network might manage. We're looking at cyber security issues. We're looking at privacy issues. We acknowledge we need to resolve a lot of those issues.

But I was talking to Joe a few minutes ago, and he was telling me, well, make sure you tell them, tell the committee what we need from you. And the answer of that question, of what will we have needed to have done to get to that nice spot in 2025, is the most important thing we need from you, is you reminding us--make sure you look at this issue, make sure you resolve that issue, etcetera.

We certainly have ideas about what those issues are, that need to be resolved between now and that future state, but you all might have perspectives on that as well, and we continue to look for your input, because what we are trying to do in wireless vehicle to vehicle, and vehicle to infrastructure for safety, is extremely difficult.

Every last one of us knows it's very hard. A lot of things must all line up for this to work, but the payoff is so great, that it's worth doing it, and we're very much committed to doing it. We just want to make sure that we get everyone's perspective on how hard that is, and what those steps that we need to take to make it happen are.

So that's a way of thinking about it that we're taking away, we hope you all help us with in this meeting, in the weeks and months ahead.

We are at a good spot, in a number of ways, in our ITS program. We have a clearly laid out strategic plan, we have a team that is mobilized, to take a lot of strong steps forward in

many of the areas we've been talking about, and we've got a lot of momentum on certain things.

I was mentioning, when I was over at Ford this morning, we had, for example, a very good week about two months ago. It was the week of the Transportation Research Board Meeting, and one day that week, I went over to RFK stadium's parking lot, and Ford did a top-notch demo of some of their V to V crash avoidance technologies, and Ford did a very good job of publicizing that kind of work to the mainstream press.

And the following day, our office, the ITS/JPO, announced what we call the connected vehicle technology challenge, which is a challenge we issue at TRB, to ask people to take a look at the DSRC space, and come up with ideas about how we could most effectively use DSRC to address some of our transportation challenges in safety and otherwise.

And we designed that for very specific purposes. One of the most important reasons we issued the connected vehicle technology challenge is partly to make technology innovators aware that this issue exists in the first place. Because the entire discussion about DSRC, and V to V, and V to I, for so many of the last many years has been in this very, very tight community of ITS folks, of transportation folks, and there's some pretty brilliant people out there that know how to work with wireless, work with safety, work with technology, that have not really been a part of this dialogue, and in our discussions with folks like Aneesh Chopra at the White House and other technology folks like Pat Gallagher at NIST, what we always hear is, get more people involved, people who have ideas. So we launched the challenge, again, the day after that demo.

(Off the record comments.)

MR. APPEL: And so if you were following the mainstream newspapers that week, you saw more articles about the potential for cars talking to each other and saving lives. You saw

more articles on that topic in one week than any week we've ever had, and a lot of those articles referenced both what Ford was doing, and what we were doing.

Reporters saw the tie-in, they realized, hey, there must be something to it if a major automaker cares about this, and the government cares about this at the same time.

We want a lot more weeks like that in the future, where the discussion of this topic goes beyond the ITS press or the transportation press, or the automotive press, into the mainstream press, and one of the most important things about getting this discussion out in the press in 2011--it's a lot different getting out in the mainstream press in 2011 than it would have been in 1995. And the biggest difference is that most newspapers, when they publish a story, they have what's called the comments section on their website. So they have an article, and anybody can press a button and write a comment about it. And people sure did write comments about this.

Some people were saying this is great, this is, you know, great for safety. Others kind of lobbed, you know, arrows at us, saying, does that mean we're going to broadcast everyone's speed and issue tickets?

The point is that whether it's supportive statements or challenging statements, we want this dialogue to happen out there in the public now, as opposed to X number of years from now, where we saying we're going to turn the switch on to make this all happen. We want the dialogue about what technology can do for safety, out there.

We want user comments on that, even if it's not a formal process, if it's the informal process of the mainstream press. And we get a good discussion going, so we're not springing this surprise on people X number of years from now.

So I think it's very, very healthy, and I think there's a lot of--I'm getting a lot of feedback from the leadership of DOT, from Secretary LaHood, from his leadership team, that

they're really seeing that between NHTSA and RITA, and Federal Motor Carrier, we're actually on the same page. And Federal Highway Administration.

We're all kind of pushing for this technology for safety thing together, and it's getting some traction, not only outside the building but within the building, which is, as you all know, sometimes as much of a challenge as in the outside world.

So we're in a good state, right now, when it comes to getting attention on this very important thing, calling attention to the issues. But coming back to what we need from the committee, it's just more advice on making sure we know what to look for as we try to get from here to that future state that we all know is so hard.

We're going to make very, very major steps in the next 12 months. You've heard about the safety pilot, Mike Schagrin and his team have been working very, very hard on that, closely with the NHTSA operation. We feel that's another critical point, to actually show this works, not just on a test track but in a real world environment, and to identify issues associated with it, to come up with technology to tackle those issues.

So I am feeling very, very good about the program. I'm very appreciative of the time you take out of your schedules to participate in this. What I can do at this point, I can take any questions you might have for me, and after that, I'll turn it over to Ron.

CHAIR SUSSMAN: Peter, thank you very much for those comments. I have a question. We know that Secretary LaHood has taken as a major cause these issues of distracted driving, and I could well imagine that he might interpret, or others might interpret some of the ITS technologies as just another distraction.

How do you deal with the senior leadership of DOT on that question?

MR. APPEL: I'm lucky, or unlucky, depending on how you define it. I am a guy that he turns to on both issues. He turns to me, and he turns to me and Ron, really, any time the distracted driving issue comes up, and he turns to me and Ron when it comes to things like ITS.

And so I need to be able to answer that question myself, and help the Secretary answer the question. I personally see no conflict, whatsoever, between our priorities preventing distracted driving and our priorities on bringing new technology to advanced safety. What I would say about it, we just need to be smart about the implementation.

There's plenty of great technology brought into vehicles that adds value, without creating unnecessary distraction, and that great technology generally has in common that it was well-engineered, it was well-thought-through, it adhered to standards that were developed, consulting with human factors experts, and the like.

Ron has a terrific team at NHTSA that deals with that issue, not just for ITS, but for any technology in the vehicle, and we take it very seriously.

You asked the question, how do I make sure the Secretary's aware. We were at the last ITS America meeting in Houston, and I was sitting with Secretary LaHood in, I guess, the green room, preparing for the speech he was going to make, and I specifically confronted that with him. I said you know what, you're going to do some Q&A after you speech, and you might get asked the question.

And I talked it through, and I talked about exactly this, that we are completely comfortable advancing technology for safety, and making sure that we keep distractive technology out, and he sees them as two completely different things.

And he is completely on board, he fully gets it. He is not draconian about

technology as people might, you know, might read it sometimes. He fully realizes the value of what we're doing, and he did take a question on it, and he handled it beautifully. So I think we're in great shape there.

CHAIR SUSSMAN: Good. Other questions for Peter.

DR. SWEATMAN: I've got one. Peter, you mentioned the 2025 timeframe. It seems to me that within that timeframe, we're going to see some autonomous applications. I mean, most of what we're dealing with at the moment is advisory, and so how do you see the transition from purely advisory, using V to V, V to I, and so on, to bring--and the issues there with getting greater density over time, how do we accelerate the introduction, and at the same time, thinking about more intervention coming into these applications as well?

MR. APPEL: My personal take on it is that we don't force the schedule on that, but, rather, we shift--we start with advisories, and get an incredible level of comfort with the advisory approach, and when we have that incredible level of comfort with it, then we explore going beyond there, and whether that happens in X number of years, or X times two, we don't know.

But if we say we need to have the intervention by X date, I think we won't be doing ourselves a service at all, because we don't know exactly how the technology's going to play out, and we need to maintain our credibility with the American people, that we're not going to put intervention technology on them until we are absolutely sure that all it will ever do is add value.

And so I think we have to play that by ear and we have to see how things play out.

But I would ask Ron to weigh in.

REMARKS: RON MEDFORD, NHTSA DEPUTY ADMINISTRATOR

MR. MEDFORD: This is a fascinating discussion, because, you know, when you

just think about, you know, the ITS technology that came about in the last ten years, much of it is now available on vehicles some of it is not all that effective in terms of risk reduction, and some of it is. But I think the real question now--you know, I've been involved in safety for 30 years.

I was at the Consumer Product Safety Commission for 25 years, and was a manager there for all that time, and, you know, consumer products account for twenty thousand fatalities a year if you take vehicles away, but almost everything else it's 20,000 deaths a year. And, you know, and motor vehicles are still 34,000 lives a year.

So it's still one of the biggest public health issues around, and so it's huge. And so when I met Peter, when he first came, and I was running the Vehicle Safety Program then, and I told Peter, I felt this is the most significant contribution that any of us could make to public health, probably in our lifetime, and that I felt the project had been languishing and lacked commitment, and, you know, to Peter's great credit, he said--you know, he looked at it, and he agreed, and I think you see sort of the momentum now that's built into this program as a result of RITA really taking a leadership role and rolling out this program.

So it's a huge challenge, but in the short time that Peter's been here, we already see a huge amount of momentum for the project, that was sort of lacking before, and NHTSA finally has a partner that we can deal with and work with effectively on it. So we're doing that. I think that car companies are really committed, some of them anyway, many of them to this project, and were really waiting for sort of the leadership.

And it doesn't seem to me that the technical issue without the safety applications are that complicated. Most of the complication is related to, you know, the security and the privacy, you know, what do you do?

And, you know, I think one of the things that we really wanted to do was to put sort of a stake in the ground, and said, you know, we now have scheduled a program that we think we can get to in making a regulatory decision about V to V in 2013, and we've put that in our priority plan, and we've made that publicly known.

And we were just talking about this at the time. I think we believe that vehicle to vehicle communication safety applications could probably be done without--well, many of them done without any roadside infrastructure needs.

I guess we're learning now that it might, and to the extent that that does it, it makes the regulatory environment a little more complicated because NHTSA can't regulate something on the vehicle until there's something to support it on the outside.

So I think that we need to answer--the most important thing that I think we need to help take care of, is sort of the political leadership level, the senior technical level within the Department, and with a group like this, and with the car companies, is to make sure that we give some urgency to solving these little difficult problems around security, which I think we're doing now, and we've got some people that we've identified that can really help bringing out the privacy issues, because there's going to be a lot of people A, were concerned about it, but B, there's going to be a lot of others that are concerned about it.

And then get people excited about it. So I think the public's beginning to get a little excited about this project. But we believe that 80 percent of sort of the crashing areas that you see today, could actually be addressed by V to V application.

And so there is, in our lifetime now, the possibility of really doing something--maybe by the end of my career, that's going to be the most significant thing that can be done for

traffic safety.

You know, seat belts are still the most significant piece of safety equipment in the car. It's kind of hard to believe, but still, if you wear it, it's still better than an electronic stability control, which can save up to 10,000 lives a year. Seat belts, still, today, is the most effective piece of technology.

But this piece of technology, and the safety applications that can come from it, can be revolutionary, and it really is because of what's available now, in terms of technology, and I think that just finding a way to take the existing technologies and get them applied and solving the policy and security issues, is the challenge that we have.

I think the rest of it, in my mind, is not nearly as difficult. You know, there's plenty of needs, and these guys have sort of identified many of those. But I think at the policy level, it's really important that you guys, I think on the advisory level, committee level, think about what you can say about some of these very critical issues, that are related to this project, in terms of moving along.

And, you know, we're going to need congressional support. We're going to need a lot of support from a variety of communities in order to make this program work effectively. But we still want to, you know, keep--that stake is still in the ground. I think in another week or two, we're going to put a new priority plan out that has a date on itself for 2013.

And so we're committed to doing that. But that's not very far away, and it's important. So we really appreciate the relationship that NHTSA has with RITA, with the car companies, and the people doing this joint research with us. But I just want everyone to appreciate how significant this is for public health, it's huge, and so that's why it's important to do.

CHAIR SUSSMAN: Ron, you've alluded to this major regulatory decision in 2013. Could you point out what the nature of that decision will be.

MR. MEDFORD: Yes. So the nature is, is the technical information available to substantiate that? We state in the application, it's--that could be--that could come from acquiring technology like this in a vehicle, cost-beneficial. So, you know, does it look it's technically feasible, economically practicable, and could you actually describe it in some performance terms, in a way that car manufacturers will then begin to be required to put this stuff in the vehicle as newly-manufactured.

And so it will be a point at which we won't start a regulation, but at a point in which we make a decision, we think we've got enough to move forward, and then we project a date by which we would either issue an Advance Notice of Proposed Rulemaking, or Proposed Rulemaking.

And, you know, the effective date of that rule now could be--it would depend on many, many things. You know, if you've got to have a box on the side of the road now, which we were hoping to never have, then you can't have it start until the box is on the side of the road. How do you get the box on the side of the road? That becomes much more difficult.

If there was a way to do authentication and security in the vehicle, that would make it easier for us. But I think--you know, all of those things can happen. But it really is whether or not the technical information is available, and Jim should speak with us a little bit too, cause he's a guy we regulate regularly, and he knows sort of what has to happen.

You know, the auto industry is a very sophisticated organization in terms of being regulated. They're used to being regulated, they're used to helping us develop data, either to show

that we're wrong or that they feel comfortable with what we're doing. Honestly. And I think we have a partner in this, because I think they see the safety benefits, and I also think they see the possibility of sort of having a business case that might help them in the future too.

So I think there's a lot to be had from--so that's some of what we're thinking.

CHAIR SUSSMAN: But it's not a--you don't anticipate an actual regulation coming into play in 2013?

MR. MEDFORD: No, no, no. It's a decision. In other words, looking at all the data that's in front of the Agency by 2013, does it appear that we have enough to sort of say we're ready to begin the regulatory process? And that could go on for years, of course.

MR. VONDALE: Just from--I'll take the opportunity--

MR. MEDFORD: Yes, please.

MR. VONDALE: You know, from my perspective, I think it is valuable to set a target date, because when you set a target date, then it kind of forces you--just like we do in the industry. If we don't set dates and have milestones that we need to meet, things tend to slip. They may slip even when you have milestones.

But I think that it is important to set that date now. I think Ron did a good job explaining what that milestone means. None of us have taken it to mean that in 2013, we're going to see an NPRM.

But I think it's very clear to all of us, and I think it's to all our benefit, to, as Peter has said, we've got to--starting last year--identify the key issues that are important to get us to the point where we can, at some point in the future, and hopefully it's 2025 or earlier, where we've actually got, we've successfully deployed this technology.

So setting milestones, trying to keep to them, identifying the key issues as we go along here, and then working together.

And this is very challenging, but I couldn't agree more. Whenever I talk about this, I say I've been in safety for 30 years, I've never seen anything with the opportunities that this technology, this project presents. I've never seen anything with the challenges that this project and technology presents.

But that's never stopped us before, and I keep saying, too, we can't afford not to be successful. We have to be successful here.

CHAIR SUSSMAN: So the ultimate rule that might some day, some years out, be promulgated, is that the automobile manufacturers are required to have this technology in the automobile?

MR. MEDFORD: That's right, and I think, you know, what would happen in 2013 is there would be a decision, and we'd make it known, if the Agency decided that it looks like there is sufficient information to justify moving ahead in a regulatory sense, we'd either do, because of the nature of this, and we don't do very many of these, but we do an Advance Notice of Proposed Rulemaking, where you actually haven't set out a proposal but you set out your goals, and then ask lots of questions, and then that would be--and that's what I would anticipate in a project like this.

And then after that--and we would give a date by which we'd issue, you know, either a proposal or Advance Notice of Proposal, if the data seemed possible.

So we'd set that next milestone for issuing or proposal.

MR. VONDALE: And I guess from my perspective too, I think the opportunities are so significant here, you're not going to have a hard time convincing vehicle manufacturers that

they need to do this.

I think the real benefit of regulation is likely to be more in the area of helping to standardize, cause I think there's going to be certainly room for innovation, but I think there's also going to be a need to have some control over this, and I've said this before.

You know, I think your watchdog role may be important in here, because sometimes technology has a way of staying a little bit ahead of itself, and this transition from warnings to autonomous control in areas that I think you may have to, may want to play a role in helping to guide the progress of this technology.

MR. MEDFORD: Just to give you a sense of how complicated it is, though. But the rule would actually set out, A, which safety applications do you have to meet, and then it would give a test method by which we would ensure that those applications are being met, and actually developing those test methods for those applications is a pretty rigorous process.

So we've already done it now for--anybody that claims they had Ford put a warning on your car, we have a test method by which you have to meet a requirement in order for us to recognize it as a Ford warning system. We already have one for many departure systems, and, you know, that's a pretty--because right now, manufacturers have different specifications for each of those.

So the government, with each of these, you know, intersection warning, curves, whatever, that additional application, by the time we issued a proposal, there would have to be a test method that we validated on the track, and that we would then take for compliance purposes, once the regulation's issued, we'd make sure that every one of those applications were, along with whatever we had to say about the design specifications for the receiving transmitter. So it's a pretty

complicated rulemaking that would have to be developed.

CHAIR SUSSMAN: Peter, I wonder if you have a perspective on this, given your professional responsibility. If you'd care to add to--your perspectives.

MR. KISSINGER: Well, I think I would just say ditto. I think the thing we need to do is we need to--more than anything--is we need to do what we can do to change the culture in this country, so that more people than the people sitting around this room appreciate the fact that this is the leading public health crisis that we face.

That's simply not the case now, and anything we can do, I think, to help change that culture, would build an atmosphere in which more of these kinds of things would be more feasible.

MR. APPEL: That's one of the things I love seeing, articles about how technology can save lives, because think about the location of an article that says that. It means that it's not a foregone conclusion, that 34,000 people have to die. There are things we can do about it.

And I think when you talk about a change in culture, there are probably those out there that just believe that's just kind of a cost of doing business to be driving on the highways, and we don't believe that to be the case. We believe that we fundamentally can change it.

VICE CHAIR DENARO: I think in one of our earlier memos in our first committee, in 2008 and 2009, we maybe went a little overboard, and used the statement then--a possibility of cars that can't crash.

But I did notice that Secretary LaHood has used the phrase, "Cars that don't crash." And so I think there's enough vision to believe that is a direction, not that we can necessarily reduce it to zero, but certainly a long way from here.

I'd also like to make a comment on some observations that have surprised me in the

last two years about this intervention versus warning.

I don't think there's a hard line, and I don't think they're necessarily sequential, Peter. I've been very surprised at some of the systems I've seen deployed, and lane departure is one of them.

We always thought of lane departure warning and then something called lane keeping, where the car is making it back in the lane, and some of the first systems that were deployed by the Japanese were actually doing lane keeping.

In fact, a lot of the systems out there are. And the tests that I've seen with drivers is very interesting. When you ask drivers ahead of time, would you rather have a warning or control? They say no way to do I want this thing driving my car, a warning will be fine, thank you very much.

And you say fine, it's time to walk outside and take a drive. And they take a drive and they come back and say, without a doubt--in fact, it goes from about 70 percent not wanting control, to after the drive, 70 percent saying I'd rather have the control. And very interesting--and furthermore, people who use this over a period of time, there's been some comment, people saying, you know, this is really making me a better driver because I'm now more conscious about this thing, you know, helping me, and I don't want it to do that, and so forth.

And guess what--I use my turn signal more, because that's the way I can change lanes without it pushing back.

So I'd like to blur that transition a little bit. I think there are some areas where we might see intervention, actually, instead of warning, if you will.

MR. VONDALE: Yes. As long as we're confident about it.

VICE CHAIR DENARO: Yes, and you guys have to make sure there--

(Simultaneous speakers.)

MR. VONDALE: Bob, you used the word "some areas." Is there certainly some areas that are more critical--

VICE CHAIR DENARO: Yes; correct; yes, exactly.

MR. MEDFORD: Joe, your question about distraction, though, you know, I think that technology will create distraction but I also think it can detect it and help solve it. I mean, I really think that we have both possibilities, you know, to actually find technologies to help solve the problem, pretty actively in the future than it is today. But that's a big challenge.

MR. APPEL: The operative word in Ron's statement is help. After the first distracted driving summit, I had no shortage of e-mails from vendors that had the technology solution to solve the problem, and I met with anybody that wanted to meet with me. The Secretary met with anyone who wanted to meet with him.

But we all made very, very clear--we know the technology is not going to solve the distracted driving problem. The distracted driving problem will be addressed by a combination of regulation of enforcement, of public information, and technology, and we need, just like with drunk driving, what NHTSA's done with drunk driving, you need a combination.

You can't just have one panacea and say, oh, this is going to take care of the problem. It's a hard problem, it's going to be with us for years to come, and we need a full court press in addressing it.

CHAIR SUSSMAN: I think Joe has a comment.

MR. CALABRESE: Peter, you know, thank you for being here. I'm sitting here, we

talked about, at the last meeting, about, you know, intermodal, it's not just the autos. I'm sitting here trying to figure out how this all fits into public transportation. Where I'm saying, on average--I'll use, you know, my agency, Cleveland is probably, you know, in the middle. You know, I'm serving about 37 passengers per, you know, per hour on my buses, 115 on my rail system.

So we're talking about where the average car is probably 1.1, 1.2. So we've got, you know, more people involved in that safety situation. And again, I've investigated enough accidents. Unfortunately, if there's an accident between a bus and a car, I'd rather be on the bus. The bus almost always makes out better.

But, you know, how is this applicable. You have great companies, like Ford, and General Motors, who really are focused on this. The bus manufacturers aren't. You know, in our industry, a good year is 3- to 4,000 buses a year, very low volume. So as I'm thinking here, how does this relate to my industry, how could we make our industry safer as well, I ask you and your staff to continue to think about that as well. How do we bring this to public transit, to make that safer?

As we're all seeing, you know, vehicle miles traveled on public transit's growing faster than vehicle miles traveled in auto, and I think that will continue, with a greater emphasis on environmental, and as we see fuel prices start rising, and, you know, unrest in the Middle East--so, you know, I just think it's important to try to keep that perspective.

It's going to be, you know, easier in one way, because we want to be regulated, you know, but hard in another way because we don't have the sophisticated suppliers that I think the automobile industry has.

MR. APPEL: Yes. When I think about transit, I look at it from a couple angles.

One of them is in pure crash avoidance safety. I mean, there are issues associated with bus safety, that we want to go for better crash avoidance, and the exact same principles of DSRC, crash avoidance, would be helpful there.

I also think about, in the same context I think about emergency vehicles. There have been certainly been some good research and good experimentation about how a DSRC system could help fire and ambulances get from point A to point B by better communicating with the infrastructure and with signal timing, and the like.

Once you've equipped some of that infrastructure with DSRC, there might be ways for buses to better communicate with the signals, to get more efficient. Overall movement of the population. You know, I don't know the specifics there, but I think that there are a lot of interesting things to explore there, using exactly the same technology, in that case V to I communication, as we're doing for all these other things.

MR. AUGUSTINE: And I would just add to Peter's comment, we are working with Federal Transit Administration on expanding the V to V work to transit vehicles. You know, NHTSA's taken the lead on the light vehicle, the passenger vehicles. It's been where we started. We've migrated that to the heavy trucks, and we're moving towards the transit vehicle.

So it's part of the plan. Admittedly, it's further behind the other two, but we're pushing in that direction as well.

CHAIR SUSSMAN: I was going to ask Don what he thought about this from the trucking industry perspective.

MR. OSTERBERG: You know, maybe even stepping back just, at the risk of offering a comment more than a question, not specific to trucking. As I've listened--I'm still

relatively new to ITS, so I'm learning a lot, and have read a lot. I think the case for change is going to be very easy to make. For ITS to be the solution for that change, I would suggest, based on what I've seen, and probably in the last 30 minutes we've used the word complicated, or complex, probably 30 times, and I think we can either be defined by the technical complexities that we are all aware of, or perhaps be defined by the conceptual simplicity of what we're trying to do.

And I think trying to get public and legislative support, we may have to "dumb the message down," and we our know--I think our rhetoric is following our self talk which is about this brutally complex series of technologies. And I think for the most part, people view it as more theoretical than real, and they have a hard time getting excited about something that just doesn't seem practical, because in part--and I don't mean to offend anyone who's been the creators of the messaging here--but I think--I was watching a TV show, The Office, the other day, a rerun, and the regional manager said explain it to me like I was seven years old. And the guy explained it.

He said: Now explain it to me like I'm five years old.

And it just strikes me, that this is probably one of those things where we need to look at our own messaging, because I think we become a victim of our own rhetoric on this subject.

Now as it relates to trucking, we know that we typically lag, you know, these kinds of things find their way into, you know, typically, luxury automobiles first, and then we get into the commercial market. But the trend right now--I am amazed at the number of trucking companies now, that have already made a decision to move to collision, warning collision mitigation.

In fact, it's been made--my task has been much easier, lately, because there's a number--I can list all of the trucking companies that have already begun to implement those technologies, or have decided to do that, which, indeed, we have.

So I think whatever the motivation is, whether it's the moral obligation to be kind of a steward of public safety and improved trucking industry safety, or the cost in claims settlement and litigation today--and I can tell you they're going up exponentially--see, I don't care whether it's the moral imperative or the financial imperative, as long as we move in the right direction.

But I see an industry that's very receptive right now, and is going to want to go faster rather than slower, and, you know, my experience with--I think it was I-V--it was one of those where I think we over-engineered the test. It took too long. We just got to learn from those mistakes, and say how can we start skating where that puck is going to be, instead of swirling around where we think it is today.

And I think a point that you--you know, let's implement an imperfect solution and get it out there, as opposed to trying to chase certainty--chasing technology that we'll never catch.

At some point, we've got to say this is going to be good enough, and it's a good enough solution that we can implement quickly. I think my industry's ready for it.

MR. APPEL: We had a really content-rich week at a Transportation Research Board meeting, but if I were to remember one moment more than any other from that meeting, it was when Debbie Hersman, the chairman of the NTSB, gave the keynote speech at the lunch, and at one point--and she's said it before I think--but she it to this entire audience.

She said like justice, safety delayed is safety denied, which is basically to your point. If we say, well, let's wait a few years cause the technology might be a little bit better, than all those lives we could have saved in 2019 maybe wouldn't get saved because we were thinking, oh, maybe the technology in 2020 will be slightly better.

We can't afford to have that attitude. I agree with you a 100 percent.

CHAIR SUSSMAN: So the truckers hearing you say, can see a business case in this.

MR. APPEL: Absolutely. Absolutely right.

VICE CHAIR DENARO: Well, the thing in the trucking business is that with many of these technologies, there's a very economic incentive, and so in some ways that industry can lead, because they're willing--it's a business case, you know, and they're willing to make the investment because the business case is there.

MR. OSTERBERG: But, you know, interesting--Joe may have read about this. But I look at these ads, these cases come through. I saw the highest I've ever seen, it was two weeks ago, a bus company not a trucking company, \$124 million in punitive damages in litigation. Trucking industry, 62.5 million, 36.5 million, 34 million, 32 million. Every week, we're seeing huge punitive damages settlements.

You know, I was--I may have mentioned to some of you before--but with tort reform taking place, kind of in medical malpractice, that's where the best plaintiffs attorneys were, I talked to a lead plaintiff attorney a while back, and said that with tort reform in medical malpractice, where are your best attorneys going? Without hesitating, he said to the trucking industry. The trucking industry is viewed as the next great frontier for huge punitive damages settlements. And we're seeing them.

So the business case I think is relatively easy to make right now.

VICE CHAIR DENARO: An anecdote on that. Years ago, in another life, when I was putting in some of the first automatic vehicle location, vehicle tracking systems, we started with transit, with buses, and Houston Metro was the first one. We did this along with Westinghouse.

And what was interesting is one of the major justifications for that system, although it's basically a safety system, was one of the justifications, but it came from the maintenance department, because if we put this extra little sensor in there that could sense engine overheat, potentially before it happened, they could justify--there was a line in their expenses every year, that they could lower significantly and justify the investment based on that. So you never know where the business model might come from.

MR. BLECHER: I think you do need to be a little bit careful in a commercial vehicle in the transit area, because like Don, like the transit area--I mean, in the commercial vehicle space, there are a limited number of freight operators who do use technology to differentiate themselves. But then, when you get below those, the bigger and more sophisticated operators, to independent operators, then it's a much, much different sell because the finances are so different.

MR. OSTERBERG: Well, it's a great point, and at dinner maybe we can talk about a couple of things that we can do. You know, we haven't--right today, we require \$750,000 in auto liability insurance for a trucking company. That number hasn't been updated since 1984.

If we want to change the economics, let's catch that up with just the rate of inflation. Is it going to drive some consolidation? It certainly will. Is it going to put stress on small businesses, which may be politically unpopular today? It certainly would. But at some point, you know, we can't be defined by--you know, I often say--I hear the people talking about these trucking companies--well, they can't afford an electronic log.

I'm like, are you kidding me? You can buy an electronic log for five hundred dollars. If you can't afford that, you're probably not maintaining the truck, you're probably not training your drivers, you're probably not doing all those other things that responsible companies

would do in the name of safety.

Of course it's self-serving for me to say I don't have a lot of sympathy for the two truck trucking company that says it can't afford it, because that's an area where you regulate it, you mandate it, and it happens. I don't buy into a lot of the hand-wringing that I hear in that space.

VICE CHAIR DENARO: Jim, you've joined us, you know, and Jim Vondale, while he spoke--but you know, we're--some of your impressions--

MR. VONDALE: I don't want to take away your thunder for tonight.

MR. BUCZKOWSKI: Well, it's been an interesting discussion. I think a lot of key points were discussed. The one thing I think--and Ron, in your discussion on validation, this is the one area, I'm just trying to remember and I may even misspeak because I haven't--this is a brainstorm thought. I'm not sure we've ever had any kind of a system that we've had to validate vehicle to vehicle. I mean bumpers but-- that's pretty good, in terms of mechanical design and so on. These are sophisticated electronic systems, realtime, and so on.

And it's a real challenge. I mean, they're software-based, and anybody that's in the software industry knows how hard it is to validate software.

So when we get to autonomous controls driven by this thing, we've got a big chore, and I think, Peter, you saw that--or listened to the discussion at Ford this morning. It's going to be a real challenge in validation, and that's why it goes back to some of the other comments on--you know, I think this is going to be a progression. We do want to get to the safety. But some of the validation, and convincing ourselves that the pure safety, the most powerful safety benefits may be so hard to validate, that we keep pushing it off a little bit more.

So if we can make progress in getting things launched on a platform--

MR. MEDFORD: When you say "validate," are you talking about effectiveness validation or-

MR. BUCZKOWSKI: False. I mean, a tolerance for false, one-way negative, or positives, is zero from a customer point of view.

MR. MEDFORD: Right. Yes. I understand.

MR. BUCZKOWSKI: You know, that will hurt the customer's confidence, the population's confidence in these products, if we don't get it right.

MR. MEDFORD: You know, the cybersecurity issue, as you guys know, a couple of guys with NSF grants in Washington State, were actually able to break into the OnStar system and take over control of the vehicle. And that's a real problem. And so anything that we regulate or require, we have to really think about, and you have to think about, you know, how are we going to prevent someone from taking over control.

The cybersecurity is really a huge -- a huge challenge.

MR. APPEL: And that's one of the areas where the federal government, with our ties to the technology community, we might be of help, because cybersecurity is a top-line issue, for example, at the White House in the Office of Science and Technology Policy. There are strong supporters in the White House technology groups of what we're doing in the ITS program.

If we come to them and say, you know what? cybersecurity is our biggest challenge, we need access to the "best of the best" in terms of thinkers on this, we can get some help.

I know that a lot of the folks in the automotive industry have access to some of the best of the best in this, but we don't take lightly how serious a topic it is, and we want to make sure the best possible thinking goes into the cybersecurity aspect.

MR. MEDFORD: You know, and NASA just released their Toyota report, when they finished their work the other day, one of the big findings out of that study was, unlike the airline industry or the railroad industry, the safety applications are not really separated from the other functions in the vehicle, so that they're all sort of interrelated.

So your missions control system, you know, the MC, it's all sort of interrelated, so you don't have a separate and defined fail-safe system that's completely just safety-integrated. So I think the auto industry's got some -- has some challenges in the future on electronics and software that -- you know, at least not in a regulatory sense, and so each company's finding its own way, it's finding its own way on how to deal with the safety critical functions, nothing separate on the part of the permanent electronic system, and the software, is integrated with the other mission control systems, and things like that.

MR. VONDALE: And from an auto industry perspective, maybe Jim can talk about this too, is, you know, we've talked about the need for flexibility in technology and so on. At the same time, we need stability at the same time, and balancing that flexibility and stability, especially if we're going to carry this technology forward for many years, and so that vehicles that we build in 2015 can talk to vehicles that were built in 2025, and we don't have to do a complete retrofit.

So that's going to be an interesting balance, that we're going to have to find as well.

CHAIR SUSSMAN: Did you want to say something or just--

MR. BUCZKOWSKI: I was just going to comment again on the security. That challenge is one of a race that never ends, and, you know, the IT enterprise, especially enterprise IT guys, focus on just keep running ahead of the hackers, and that could present a challenge for us.

Now, you know, what it may mean is that we have to make sure that our systems are

continuously updatable, which is, you know, obviously a model that we're very closely looking at, and a model that the consumer electronics industry has had for a while. And, you know, I think it may be an important part, but outrunning -- outrunning the hackers is what it's going to be all about. It's a never-ending race.

VICE CHAIR DENARO: Peter, did you have a comment?

DR. SWEATMAN: Yes, I guess on a somewhat different issue. The clear focus on safety, I think that's been the greatest thing that's happened in the last couple of years, as far as V to V, and V to I is concerned, that really moved things forward, and that's where we need to be.

But I guess the point I want to make is that it's not as if safety is going to stay the same, and it's just we can tackle it as we know it, because rapid change is taking place in vehicles for many other reasons, and part of the intriguing thing about ITS is that it tackles safety but it also tackles mobility, reduces congestion, and ultimately tackles sustainability.

And so we like to talk about that, and we talk about that a lot. But at the same time, we want to focus on safety, and safety isn't staying the same because vehicles are getting lighter and smaller, and so on. We're getting electrified vehicles. We're getting large batteries, and other new chemistries in vehicles, and so on.

So it's not a stationary target that we're looking at, it's a moving target, and I guess that's just another reason why this strong safety focus of V to V, and V to I is so important.

But I just wondered how NHTSA and RITA really view that in terms of keeping the clear focus on safety while there are many other things happening that are leading to potentially more safety challenges, but also a lot of other benefits that are going to come out of ITS at the same time.

You know, coming back to what Don was saying, it's kind of hard to explain how this is all going to happen, because it isn't a stationary target, I don't think.

MR. MEDFORD: You know, last week, on Friday, at NHTSA, we had a workshop of mostly academics, and our work, and some work is being sponsored by -- but it's all on the -- you know, addressing the real strategy that car companies have now in significant mass reduction in order to meet the fuel--you know, the ever-increasing fuel economy standards and greenhouse gas emission standards.

And, you know, the traditional ways of sort of measuring, car companies would all say, well, we're not going to redo safety. That means they're going to meet the federal test and they're going to do well on the IHS test, and they're going to do well on the five star government rating program that we have.

But as Jim knows, and others, that doesn't begin to measure whether or not the vehicle that you're producing with less mass is going to do as well in a crash.

And so this is a huge problem, or huge issue for us, in figuring out, you know, how do we tackle the question of mass reduction, and it's being reduced with high-strength materials, and, you know, substitute materials, and so in some ways, you're not--it's not just a mass, force--you know, force equals mass times acceleration calculation, because you're getting a lot of strength out of--more strength out of some of these new materials.

But there definitely is a difference, and so a consequence that we're very worried about, of course, is safety related to the mass reduction related to fuel economy standards, and so we need to be mindful of that.

But I agree with you. I think this technology presents itself with the opportunity to

reduce congestion, which helps, you know, a lot in this area. So I think we agree with that idea, the sustainability. You know, I still think that most of the fuel-saving technologies that we're looking at today still make fairly marginal improvements.

You know, the guys work hard on a new engine, or, you know, turbocharging, downsizing, and strategy, get, you know, AC transmissions, and you get, you know, rolling resistance improvements, and -- but these are like marginal things.

I think there's like--you know, there's not been like a major leap, like this is going to be a major leap for safety, I think, but I don't really see a major leap for fuel economy, so far.

Right now, the electric vehicle is depending on the grid, which is mostly, you know, coal-fired, so the footprint of electric vehicles is pretty big, and if you actually look at the, you know, the life cycle for an electric vehicle in terms its carbon footprints, not much different than a gasoline, or well-performing gasoline engine.

So I think we've got real challenges that aren't being met, in terms of real breakthroughs in fuel economy technologies, that aren't there yet.

VICE CHAIR DENARO: Well, if we can, I'd like--okay, we'll do one more commenter question, and then I'd like to transition back to the initial purpose of this session, which was communications, and see if in the 20 minutes remaining, or something, we can maybe write down a few areas of possibility for recommendations.

So do you want to make one more comment?

MR. KISSINGER: I guess part of this conversation perhaps was Don's point, which reminded me of something. A couple years ago, we had a forum where a CO, one of the OEMs spoke, and it was, you know, after-dinner Q&A, and he was asked specifically about when would--

you know--when do we start seeing these technologies.

And he answered it something to the effect that I'm very confident my engineers will give me the technology. I'm much less confident my lawyers are going to let me put it in a car.

I guess I'm just--so that's the--the question is, I mean, has that changed at all? I mean, it seems like it must have changed a little bit, because with such a--you know, so much new technology coming in on a voluntary basis.

But it goes to this whole issue of validation, and I'm sure--obviously, you guys have just left technology in the car without validation and satisfying your own internal --

MR. VONDALE: Well, what I've said, and I think was said here several times as well, is a warning system -- a warning-based system addresses a lot of these issues much better than an autonomous control system, and I think that's one of the benefits.

I don't know any system out there that's a 100 percent, whether it's seat belts-- nothing is a 100 percent effective. And I make that comment to our lawyers all the time, so--

MR. MEDFORD: 55 percent of fatalities are belt --

MR. VONDALE: Right. So even the best technologies are not a 100 percent. Now we obviously have to be careful if we start putting technologies in that are annoying or otherwise ineffective. Then people will, at we said this morning, shut them off, they won't want them, there'll be a backlash.

So there has to be this balance where we're able to put in technologies, knowing that they're not a 100 percent foolproof, but I think that's a lot more compatible with a warning-based system than it is a autonomous control system. So those are the kinds of policy issues we're going to have to wrestle with and say, when is this technology ready to be put in?

MR. MEDFORD: I don't necessarily agree with all of that, but one of the things that we've been very careful about. We look at a pretty good sweep of technologies and we really haven't seen anything that's--you know, cause we would require--if we saw something really good, we would require it.

And so the elegance of electronic vehicle control is remarkable, and basically it detects that you're about to go out of control, it, you know, throttles the vehicle and does differential braking, and puts you back in the path, the intended path, and you never know it's happened. So that's like one of the most--and it saves up to 10,000 lives a year. One of the most elegant technologies that I've seen in my whole career.

But there's nothing like that that's behind it, that I've seen. So that Ford collision warning isn't that remarkable in terms of we haven't therefore regulated it. Lane departure warning isn't that good. Lane keeping isn't that good.

Crash imminent braking, which gives you some active braking, may be like the possibility of the next one, but we're not sure. So we're evaluating that.

But I think that there isn't really another suite of technologies sort of getting to them. Car companies are going to be very reluctant in the United States--they tell us privately, like they tell you, to put the stuff in before they feel pretty darn comfortable they're not going to get sued because cause something didn't happen when it's supposed to, and maybe in light of Jim saying what he's saying. But we would require it for vehicles, if we really felt like there was a real good injury reduction cost-benefit case. And we haven't seen that in most of these technologies yet.

DR. DROBOT: So let me go back to Peter actually said earlier, and that is when there is really a progression of what you have to be comfortable with over, and the first one is

notification, eventually moving towards some form of control, and eventually moving towards some form of real autonomy, essentially.

And, you know, in the long run, I think it's worthwhile to sort of take a look at, you know, what's in this technology pool that's coming down the pike at you, and what's a reasonable road map of the research, the trials, that in fact can get you down that path?

And the technology will be there, I think, and I don't see that as a problem. Okay. What I do see is some way of proving it in and getting it accepted, and, you know, part of the program, and I see RITA having a key role, making sure that the benefits are there.

MR. APPEL: And I think a lot of what we're doing with the safety pilot is all about that, is to get it out there in a real world environment with a lot of vehicles, and seeing it in action, and then talking about it.

DR. DROBOT: And again, you know, I think the emphasis, you know, in this discussion has been on safety. There are other functions. I think, you know, we were sort of discussing at lunch, you know, whether you really end up putting in a system for every function, okay, or in some sense, in the way Walt described, you have a basic system on which it is possible to write a number of applications that really addresses the whole plethora of things that you'd like to use this for.

And make sure that it is safe to put it in a car, it's not annoying, it's not distracting, you know, that it has the right properties, essentially.

MR. APPEL: Once we have the capability for vehicles to talk to each other wirelessly, there's a tremendous amount we could do with them. But maybe some of those applications wouldn't, on their own, have justified building a whole infrastructure to do it, or

building the whole technology to do. But once you have the technology--

DR. DROBOT: Collectively, they do.

MR. APPEL: There's tremendous additional benefits--on environmental, on mobility, and emergency response. All kinds of things.

DR. DROBOT: Yes.

RESUME TECHNOLOGY AND COMMUNICATIONS DISCUSSION

VICE CHAIR DENARO: So let's go back to communications now, if we can, to segue, and Walt, we'll offer you a proverbial seat at the table.

And I like the construct that Peter gave us earlier, although I use that similarly but a little different. What Peter said is, you know, look at 2025. If we're successful then, what would be the things that made us successful.

I think maybe to address our requirement here of coming up with recommendations as a committee, we can maybe turn that around and say if it's 2025 and we're not successful with respect to communications, what is it that went wrong? What was it that got us?

So what I'm fishing for, however you want to look at this--what I'm fishing for is can we come up with a small set, at least a start, at what some of our recommendations would be?

And I think Peter said something else I like also, is that as a committee we're not coming up with the answers. We're really coming up with the questions. And so what are the questions that we want to make sure that the JPO focuses on to be successful with respect to communications?

MR. BLECHER: Well, Bob, I think maybe the answer to your question is defined by the necessity to do what JPO has done, which is to commit to 5.9. I mean, if we fail in 2025, it's

because we picked a technology.

VICE CHAIR DENARO: Because we?

MR. BLECHER: We've picked a technology.

VICE CHAIR DENARO: Picked a technology.

MR. BLECHER: But if we succeed in 2025, it's because we've finally picked a technology, put a stake in the ground, and was willing to live with that, was willing to live with obsolescence, was willing to live with the criticism of picking a technology.

I mean, I think that's--you know, I think that's--if it doesn't work, that's what's going to be the result. But I don't see any other way of getting there.

DR. DROBOT: But I think, when I saw the presentation earlier, okay, Walt's presentation, and I've seen this over and over again in communications, the systems that are long-lived, okay, tend to be ones that are in fact technology agnostic, and can accommodate to changeover in technology. Okay. And, you know, if I look at the timescale of, you know, 2020, 2025, 15 years, on the technology curve, that is ten doublings essentially. I mean, for the underlying technologies. Okay.

And to actually pick what's going to be there, and what's going to carry, is the wrong thing to do. It's actually, architecturally, how do you do this and isolate yourself from the specific technology?

VICE CHAIR DENARO: So let me interpret what you're saying. What you're saying is you need an architecture that's technology agnostic, even though in--pick a date--2014--we have to pick something--

DR. DROBOT: Correct.

VICE CHAIR DENARO: --that we're operating with.

DR. DROBOT: Yeah, but--

VICE CHAIR DENARO: But the design has to be such, that that can be replaced.

DR. DROBOT: Look, let me--cause I mean, I use this as an example. Okay. You know, this device has 16 gigabits of storage on it, and if I go back 15 years, to 1995, this would have cost 84,000 bucks just for the storage and been the size of a small refrigerator. And if you had asked, 15 years ago, go and pick me what you're going to build this infrastructure with, I think you would have really arrived at the wrong answer.

VICE CHAIR DENARO: And so the infrastructure has been robust, even though the technology is massively--

DR. DROBOT: Correct. Okay.

So when you go through and say here is an architecture for an application, you know, yes, at the bottom of the stack I have a driver for this particular communications means, it's fairly trivial with the right architecture to pop in the next communication. You don't have to rebuild everything from scratch. Okay.

VICE CHAIR DENARO: So are we, to some extent here, addressing the issue of this question we had, which was actually one of our questions as part of this committee--what should the government do and what should the government do--what should government's role be? And I think you started to get at that Walt, when you talked.

DR. DROBOT: I have one more thing to add.

VICE CHAIR DENARO: Okay.

DR. DROBOT: I'm sorry it's so long-winded. But when I look at the movement of,

you know, what's happening in silicon, one of the things is that you are really ending up with systems on a chip. You know, most of these devices today will have anything from two to six radios embedded in a single device, essentially. Okay.

And the reason you do that is it's easy to take care of which communication method I'm going to use. Okay.

I think what you do have to worry about is how do you end up on the cost slope of stuff that's affordable, and that people are used to, and can interact with in some easy manner, essentially. And that means you really have to take a look at where the mainstream infrastructure is likely to head, and see can I use that to fit this purpose?

And, you know, 5.9, I think it can be part of the solution, but the answer is it's only part of the solution.

VICE CHAIR DENARO: I don't think you were saying anything different, were you Scott? That it's part of the solution. We realize that. Yes.

MR. FEHR: I was just going to say it's important to understand the communications needs before you pick the medium that's--

DR. DROBOT: Sure.

MR. FEHR: And we may have made some of the right choices already, but we have no way of finding out or confirming that now.

MR. AUGUSTINE: Maybe, Bob, I could throw out--it sounds like what we're talking about, in a circular fashion, is essentially performance-based requirements, and right now, if you look at it at the other end, you would say, well, DSRC meets those requirements now. I'm not sure whether it meets it, but I think we're taking that performance-based approach to address what

Adams's talking about. Over time, other technologies may come in that also meet those requirements, under cheaper, they're more affordable, they're--

DR. DROBOT: Don't lock them out.

MR. AUGUSTINE: Yes, exactly.

DR. DROBOT: Yes.

DR. SWEATMAN: I think I agree with--John says we're circling around it, and I think we probably. But, you know, it's like anything else. You've got to know where you are, you want to know where you want to get to and how you're going to get there.

And this architecture I think's very interesting. I mean, Walt's presentation, to me, kind a came out of the blue a little bit, and I think he said, you know, this has sort of looked good for five years, or something like that.

And I think the reason we would be successfully in 15 years time, or 20 years time, we have an architecture that's going to last that long. If we don't have an architecture that's good for that period, then I think that's a problem, and we need to be on a track, how we're going and how things are changing and evolving, and I think Adam laid out, you know, maybe five elements that an architecture should have.

And, you know, I think we need to think like that, but, you know, we need an architecture that is going to serve us for more than five years, that's generic enough, and I guess, to some extent, abstract enough, that it's going to do that and we can track what's going on in the key elements.

VICE CHAIR DENARO: It seems to me what's important here too is--maybe it's your concept of layers, and so forth--but that it's important to decide what's part of what we call the

architecture definition. It's equally important to be explicit about what's not part of that architecture definition, and know where that line lies.

Anyway, you were going to make a comment earlier, Walt. Oh.

MR. FEHR: I'm sorry if I signaled the wrong thing.

MR. KISSINGER: Well, it seems like this is an interesting problem we're struggling with. We're contemplating the future of faster, cheaper, and better. You know, that seems like the best kind of problem to worry about, because, I mean, if we get tenfold increases in those three attributes, I would think, you know, unless we do a really terrible job today, you can justify any cost of conversion or switching to a new system.

DR. DROBOT: Yes. So the hardest part, in some sense, is dealing with the legacy of what's already out on the road, and the labor it takes to install a device and actually make it function at the level somebody would expect, if you want to do it rapidly.

VICE CHAIR DENARO: What about this area of cybersecurity? It sounded to me, when we brought that up earlier, that that sounds like a major area that perhaps JPO is -- well, I know they are focusing on it, but that sounds like an extremely important piece here.

DR. DROBOT: It's very important. You have to do it. But my gut feeling is a very solvable problem at the same time.

VICE CHAIR DENARO: Okay.

DR. DROBOT: And I mean what was good to hear is, I think they're using national resources of the right kind at this point. They've reached out, and I think that's good.

VICE CHAIR DENARO: Well, 20 years ago -- you know, not 20 years ago, 10 years ago -- people told me how dangerous it was going to be to ever, ever put your credit card

number in and buy something on the Internet.

DR. DROBOT: Yes.

VICE CHAIR DENARO: And I've never heard of any problem.

DR. DROBOT: There are but it's--

CHAIR SUSSMAN: Adam, at earlier meetings, you've worried, it seems to me, about the magnitude, or rather the lack of magnitude of expenditure as part of what DOT is doing in the technologies, and how do you feel about that now?

DR. DROBOT: I can tell you, when I look around the world, and I look at, let's see, what the Europeans have put into the Seventh Framework, what the Chinese have put into the 843 programs, what the Koreans are doing, what the Taiwanese are doing--we're underspenders in this field.

MR. KISSINGER: Well, maybe we ought to write that up and have Joe put-

DR. DROBOT: And, you know, it's not just anecdotal. I mean, you can actually take a look at the hard budget numbers that, you know, that all of these nations are putting out in this, and, you know, they very aggressively want to own and be sort of the practitioners of this technology, want to export it to everybody else.

MR. KISSINGER: I mean, those factors often resonate more on the Hill than safety does.

DR. DROBOT: I think it's an important point.

(Simultaneous speaking.)

DR. DROBOT: Let me go -- because I think, you know, Walt will say we were one of the bad guys on this. I think the JPO-I think before Peter had spent a million dollars on security,

and I think one of my guys, Tao, had looked at it and said I don't think you understand the problem. Okay. He says what do you mean? Says we spend a million bucks, we have the answers. He says you don't even know what the problem is.

And I think what you're discovering is, yes, it's a serious issue. Just to solve that, if I look at what NSA is doing for equivalent problems, they're two orders of magnitude on spending beyond where you are. I mean, you know, these aren't small numbers. And you do have a unique problem, and that is if you look at 200 million, 220 million vehicles, making sure that that key infrastructure works for all of them, ticks properly, the costs are reasonable, that's a major problem. Just designing and deploying something like that is, you know, is not a small item.

CHAIR SUSSMAN: Short of two orders of magnitude spending increases for DOT--

DR. DROBOT: I wouldn't say--

CHAIR SUSSMAN: --which obviously didn't happen. But what's the real answer?

DR. DROBOT: I would say, look, I mean, if you look at the benefits from this, okay, spending at like 500 million bucks a year, half a billion or so is not unwarranted. If I look at comparable programs that the nation's dealing with.

VICE CHAIR DENARO: Let me put it this way. When I look at what DOE is going to spend on electric vehicles and the grid, you know, I think the per year budget is an order of magnitude above --

(Simultaneous speaking.)

VICE CHAIR DENARO: Let me just quickly--Ann, are you still with us? I did hear too and that made me remember her, so. I was going to invite her to participate. It's always

hard when you're on the phone to get a word in edge-wise.

We only have a few minutes left.

So far, what I've heard is -- and we'll sort this out in the dialogue, in e-mails and so forth. But, you know, Scott mentioned the potential of--you know, we need to pick and commit to a technology. We need to balance that, on the other hand, with Adam's comment of you want to be technology-agnostic and that's essential to success.

I see a balance between those two and we can talk more about that.

John Augustine mentioned performance-based requirements. Peter Sweatman offered, you know, maybe Adam's five elements of architecture as a place to start, and something that we maybe want to repeat. That sounds good to me.

I brought up the idea, the area of cybersecurity, which is essential for success, or could be the downfall of this, to use my construct earlier.

Peter Kissinger brought up the evergreen spending issue, and maybe the competitiveness associated with that.

And then I would also just reach back to what Joe Calabrese said earlier about please keep transit in the fold here, and Don also, heavy vehicles and trucking. So I would agree with that.

Any other ripe areas that we're forgetting or missing?

How about -- is there -- and I'll look to Jim and Jim on this. On one hand, we've got the government going forward with, let's say, architecture and plans and so forth. On the other hand, for your own purposes, you're innovating in your own direction -- Ford, in particular, but all the other companies. Is there any potential mismatch there, where that could create a problem?

MR. VONDALE: I was just sort of thinking, when Adam was holding up this, I was

just thinking, you know, do the rules that apply to this apply to automobiles? And I think that's a real question.

VICE CHAIR DENARO: What kind of rules?

MR. VONDALE: Well, just all the rule about how quickly you can make changes, how quickly the technology's going to change, how quickly you can make changes. Whereas I'm not the expert on electrical architecture, Jim's probably a little bit more knowledgeable about that, but it seems to me that this whole--I was talking about this balance between flexibility and stability for vehicles. I think that's where the conflict could be.

CHAIR SUSSMAN: You know, Walt talked to us at the beginning of the afternoon, focusing on a new architecture that's gradually going to take over from the old architecture, based on some of his thinking, and I wonder what he would think about the notion of that architecture being technology-agnostic. Is that easy or is that hard, and how do we go the right way?

MR. FEHR: We're definitely going to attempt to make the architecture technology-agnostic. In order to be long-lived, it needs to be. That said, I think other people have commented around the table, that we have to pick something--

DR. DROBOT: You've still got to build it.

MR. FEHR: You have to build something in order to learn more about it. So, to a certain extent, we're going to try to walk on both sides of the line. That's the only realistic thing you can do. Or else you never have anything, so--

VICE CHAIR DENARO: Well, technology-agnostic, it works with whatever's there today.

MR. FEHR: Right.

CHAIR SUSSMAN: So the question may well be--Joe, you posed the question of what didn't we do, if we're not successful in 2025. If one takes seriously what Adam is saying, what we didn't do is spend enough money. Maybe it's that simple. That's of course not simple but--

DR. DROBOT: It's not simple but it's--

CHAIR SUSSMAN: That may be the answer. If you underspent by two orders of magnitude--

DR. DROBOT: You know, you have, I mean, put you at the table, and I don't know whether it's a public number, but, you know, when you do a proofing and a major launch of a technology like SYNC, right, what kind of numbers are you talking about?

MR. BUCZKOWSKI: Be careful--

DR. DROBOT: No; no. Just order of magnitude, not--

MR. BUCZKOWSKI: It's something I wouldn't want to talk about. I think we've been asked that question several times in public and media, and so on. We just really don't talk about what costs us a lot.

But one of the things--I mean you open the door, I'll jump in. We do have to focus-- I'm wondering if we have to be careful about focusing and talking too much about technology and infrastructure, and not talking about what we want to deliver to customers, and when we want to deliver them, in phases, and so on. Because there's enough technologists that'll figure out what the technology should be.

We can create the architecture, knowing -- I mean, you know, I'll tell you that just yesterday, I was talking to a major company that makes operating systems, and whether they're interested in doing some, taking their operating system to the automotive, and their biggest fear is

they don't want to support anything that's more than two years old. All right.

So we, as the technologists, have to figure out how we're going to be able to seamlessly transition, and the features and functions and things that really benefit customers, whether they're information first and then safety later, whatever, will ride on top and we can change, as Adam was talking about, the technology underneath, over time, and continue to build and support, and build better and better features on top of that.

And so I guess back to where we're starting is are we thinking enough about what do we want to deliver to customers and how soon do we want to deliver it, and then letting that drive the decisions around the technology, versus trying to put an infrastructure in place and saying, okay, now that we've anticipated the infrastructure, now let's build the stuff on top of it.

They're related, but you just have to be careful about picking, you know, the 5.9. For some of the things we've been thinking about, it's absolutely the right thing; but not for everything. But if we say we're going to pick the 5.9 and go with it, well, gee, it may take us longer to get to where we want to get to because of, you know, technology built up with the suppliers and deployed, and so on. In the meantime, we could be doing something else, that doesn't require 5.9. We could be doing it tomorrow instead of two years from now.

So just food for thought.

CHAIR SUSSMAN: That's the real tradeoff, yes.

VICE CHAIR DENARO: Peter, did you have a comment?

MR. KISSINGER: You know, picking up on the last point you made about sort of a private track and a public track, I mean, I would draw on the table -- I think one of the observations about it, we're in fact looking again at 2025 and what went wrong. There's a possibility that the

government, especially in a leadership role, which JPO's announced, hasn't done enough to foster the kind of public/private collaboration that probably was necessary to overcome all these technical-

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DR. DROBOT: Yes. Well, Peter, what's actually sort of fascinating, I sit on a panel for DoD, okay, and one of the largest projects in communications is something called JTRS. Joint Tactical Radio System. Use it for troops in the field. And the government has spent, I mean, just to give you a notion, probably north of \$2 billion, so far, on that system. Okay. And they've come to the conclusion that they're seven generations behind what's being offered commercially today, and they're going to scrap it.

MR. MEDFORD: Does that mean that maybe the money spent does not necessarily the equivalent of what you get --

DR. DROBOT: No. No. No, no, no, no.

MR. MEDFORD: Nobody's supplying that, right?

DR. DROBOT: No. In fact, and you look at the guys who built handsets, okay, they reinvest probably, around the world, 5 billion bucks a year.

MR. APPEL: To build what did you say?

DR. DROBOT: Build the next system. And they turn out systems that are roughly six months -- And therefore I understand Jim's comment, okay, that hey, I don't want to support that operating system cause anything that's more than two years old isn't in my bucket. Okay?

MR. APPEL: So it shows it's a very different environment. What's the average length of time someone holds their phone--I mean, keeps their phone?

DR. DROBOT: It's between two and three years.

MR. APPEL: And the average time someone keeps the car?

DR. DROBOT: Twenty years. Between ten and twenty.

MR. APPEL: So we are--

DR. DROBOT: An order of magnitude, yes.

MR. APPEL: --talking about two very different worlds in terms of how fast changes in technology can actually--

DR. DROBOT: But I am sure that, you know, Ford is taking a hard look at, you know, how do you take electronic goods and isolate them, to some extent, so you can follow the life cycle? I think as those solutions come into place, and what we will be facing is likely systems for cars will be very different.

VICE CHAIR DENARO: I want to respect our break time. We have dinner at 6:00, is that right? Okay.

CHAIR SUSSMAN: What are the logistics of that now?

VICE CHAIR DENARO: Well, let me just--

CHAIR SUSSMAN: I'm sorry, beg your pardon.

VICE CHAIR DENARO: That's okay. What we will do is we'll try to summarize this, and encourage additional discussion and debate. I think it was a good day. I think, in fact, in my view, this was our best day yet as a committee. So I want to thank you all for the input.

Walt, did you have anything?

MR. FEHR: I just wanted to leave you with one last thought, because it just points out that there's a lot of clever people out there, that may help solve this problem for us. One of the big dilemmas that we've always had is in talking about vehicle to vehicle, crash avoidance kinds of

things, how do you get equipment in enough cars, so that the ones that have the things can take advantage of it?

If somebody approached us with a way of getting, effectively, that equipment into all of the cars on the road, without touching the cars, by doing it, by putting a fixed sensor mechanism, that we create the messages that would have come from the cars, had they had the equipment in it.

So there are a lot of clever people out there that may come up with things that are completely out of our realm of understanding right now, but get us right past a tough spot. So I'm pretty enthusiastic about the possibilities. If there are people like that out there, we just need to encourage them.

MR. GLASSCOCK: Chris, I, and Valerie are driving, so we can split up, and I have directions for the drivers.

CHAIR SUSSMAN: So meet in the lobby.

MR. GLASSCOCK: At a quarter to 6:00.

CHAIR SUSSMAN: Quarter to 6:00. A half hour. All right.

Well, thank you, Walt, for an excellent presentation. I think you set us up beautifully. And Peter and Ron, thank you for your participation. I think you sparked some excellent discussion that will be very valuable. Thanks to everybody. We'll see you at a quarter to 6:00 in the lobby.

(Whereupon, the above-entitled matter adjourned at 5:09 p.m.)

COMMITTEE ADJOURNS FOR DAY ONE

THURSDAY, MARCH 3

(8:10 a.m.)

RECONVENE MEETING

CHAIR SUSSMAN: Well, welcome to our second day of meetings out here in beautiful Ypsilanti, Michigan which my cab driver seemed mystified by. Yours was too. He said how do you spell that and he wanted to put it into his thing. I said I have directions, I'll guide you.

Anyway, a few thank you's in order, first for our committee member Jim Vondale for getting us an excellent dinner speaker in the other Jim last night. He obviously has some deep insights into this area. He's made it his passion at least for the next while so that was - that was very helpful, thank you for doing that. And thank you for Walt sitting at the back of the room, some kudos to him for a very substantial and excellent presentation on the technology and communications aspects. I thought that we really made quite a bit of progress given the depth of the substance, Walt, that you were able to provide for us so thank you there as well. And thank you to whomever it was that came up with that dinner place last night. I've never tracked down - Peter, was that you?

DR. SWEATMAN: It was not me. I've learned something.

CHAIR SUSSMAN: I thought you as a local were probably responsible. Who was it?

MR. GLASSCOCK: Bob and I and the Marriott.

CHAIR SUSSMAN: Well okay, it was quite a nice dinner and we're sorry that Rob Bertini missed it. Rob is here with us for the second day. He's a deputy administrator of RITA working with Peter Appel.

VICE CHAIR DENARO: We drank to you though, Rob.

DR. BERTINI: Thank you and believe me I was supposed to be at the dinner but I was sightseeing around Ypsilanti looking for a hotel room instead.

TRANSFORMATION DISCUSSION

CHAIR SUSSMAN: So Rob, Peter was quite an active participant yesterday and we hope you'll be the same. Rob was dealing with a GAO audit back home and I'm quite certain in saying that he would have rather been with us than doing that. So this morning's agenda, we begin with discussion of the last of the major areas that this committee identified in its initial meeting back - and wrote up in the last summer, and that deals with the question of transformation by which we mean here institutional transformation, transformations of the way of doing business, of the relationship between the feds and the state folks, between public sector and private sector and perhaps some others that we - that we don't capture under that particular rubric. And our resource person coming in behind the very nice job Walt did yesterday in getting us going on the area will be Valerie Briggs. Valerie, I think everybody here knows Valerie, so if you will have at it that would be great and we'll go through till about 10:20 or whereabouts and then we'll have our breakouts in the subcommittees and before we go into those we should discuss what we hope will come out of those discussions and who should participate in which.

MS. BRIGGS: Okay. I'll sit down here unless you all are having trouble hearing me.

CHAIR SUSSMAN: However you like.

MS. BRIGGS: And so one of the things that I wanted to do, I know you all - I'm looking forward to this discussion because I think it's going to be helpful to me and to our office. I'm responsible for the policy research as well as the stakeholder engagement and communications

aspects of the ITS program and this is an issue that we grapple with quite a lot. And a lot of my questions revolve around what is the appropriate federal role. And we are a research program and that is our charge, and so even within what is the appropriate federal role, well what is the appropriate federal role for a - what is inherently a research program. And we also do support deployment in that we have a technology transfer program and a professional capacity-building program. We are responsible for building the professional capacity of the industry, but we are inherently not an operator of ITS. And so with that in mind I was just going to let you know what we're already doing in order to start the dialogue.

CHAIR SUSSMAN: We are a research program is JPO specifically.

MS. BRIGGS: Yes, yes.

CHAIR SUSSMAN: Not RITA, not DOT but JPO.

MS. BRIGGS: Right. This is what JPO is doing. So once we complete the research we inherently feel that we transfer the technology to our partners in the state and local agencies and transit agencies and private sector or a Federal Highway and APTA - I'm sorry, Federal Highway and Federal Transit Administration and FRA and the other modes that we work with also take on a responsibility for supporting the ongoing use of that technology.

COURT REPORTER: Once again, if you could keep your electronic devices as far away from the mic's as possible I'd really appreciate it.

MS. BRIGGS: And if you need me to use a microphone let me know.

COURT REPORTER: Okay.

MS. BRIGGS: Thanks. So -

CHAIR SUSSMAN: Can people hear Valerie all right? Before she really wings

into the whole flight?

MS. BRIGGS: Okay? Okay, good. So this was what you wrote in your advice memo. I won't read it but it had to do with the fact that the industry is changing and the relationships within the industry need to change. And then you identified two specific areas, one was the federal-state relationship and the other one is the public-private interface, and so we'll talk a little bit about both of those. Just to start out, we work through the modal administrations within our department. We feel that they're our first level of stakeholder in that they are the ones who determine our budget and how our money is spent, and they help us execute the program. So we have a management committee that determines how the ITS budget is allocated and it's led by the deputy secretary and it includes the administrators from each of the modes in the blue boxes. So all of the major surface transportation modes are part of that. And of course we are within the research and administrative technology administration. So it's not that the staff of the JPO or Peter decides the budget, it really is a multimodal environment. We also work with each of these -

CHAIR SUSSMAN: Just a question.

MS. BRIGGS: Yes.

CHAIR SUSSMAN: If you don't mind taking them along the way, or would you rather get all the way through?

MS. BRIGGS: No, let's take them.

CHAIR SUSSMAN: So on this question of resource allocation to RITA and to JPO, you're characterizing it as sort of a joint decision among everybody on that bottom line of your chart.

MS. BRIGGS: Very much so.

CHAIR SUSSMAN: So is the same true in any sense for any of the other administrations?

MS. BRIGGS: No. I mean, we are led by this group of administrators and they are the ones who allocate our budget. We are intended to be a multimodal organization. We serve the department in all of these modes and so that's why.

DR. BERTINI: We are the only program operated this way. If you look in the 2012 budget there are several new programs that we are proposing from RITA to be operated in a similar way with a collaborative decision-making process for setting research priorities.

CHAIR SUSSMAN: But say FTA it's not done that way.

MS. BRIGGS: Right.

CHAIR SUSSMAN: They get their money and RITA or FHWA for that matter has nothing to say about it.

MS. BRIGGS: Exactly.

CHAIR SUSSMAN: Okay, thank you.

MS. BRIGGS: Right.

DR. BERTINI: And we might annoy them if we did say something.

CHAIR SUSSMAN: And you have, but.

MR. KISSINGER: I mean, to some extent isn't the new safety council -

DR. BERTINI: Yes.

MR. KISSINGER: - the same thing. I mean, it's probably not as institutionalized.

DR. BERTINI: There are I would say many other cooperative councils and committees and so on, but I don't believe that any of the other ones make funding decisions for

prioritizing. Because ultimately FHWA will make kind of the safety-related financial decisions internally to their organization.

MS. BRIGGS: We also of course have a strategic planning group which is more at the director level, Rob and Shelley's - or I guess Rob in his current acting director role and Shelley as the long-term acting director chair that group and they're the ones who make the determination and the recommendations then to the administrators. And then within that we execute the programs very much in partnership with the staff of these modes. So in many cases research programs are even led by staff from these other modal agencies. And with the V to V and V to I program we counted up recently that there are 80 staff across the department in these various modes involved in managing and executing that work. So while we have a relatively compact staff at the ITS JPO with 17 people, we do work very much in partnership with all of these other staff. And you know, that is both a coordination challenge but it also brings a lot of extra expertise into what we're doing.

VICE CHAIR DENARO: Valerie, did you say what the blue was on there?

MS. BRIGGS: The blue are the modes that are part of the management council that determines the budget. Those are the ones we work with. We do not work directly with St. Lawrence Seaway or FAA because we are surface transportation primarily.

DR. SWEATMAN: And Valerie, who chairs this group?

MS. BRIGGS: The deputy administrator. I'm sorry, the deputy secretary. Deputy secretary.

MR. BELCHER: This may not be a fair question, but when I look at the 2012 budget and then when I look at the administration's authorization proposal for the next six years, RITA - with the exception of the money that's coming over from the FCC RITA is the one

administration that is staying stable and not growing. Do you think that this management council structure and not being able to uniquely advocate for your own resources is a cause of that? One of the comments of discussion yesterday was how under-resourced the research efforts at USDOT are with relationship to the rest of their - rest of the world. So is that - I mean, is there something you can comment on that or not?

DR. BERTINI: I would say, I mean overall RITA is growing in the proposal that we've released. The ITS program is staying flat.

MR. BELCHER: Right.

DR. BERTINI: There were some discussions about - you know, internal discussions about reauthorization and I think the consensus was that the program is a good size and I don't think the structure constrains the ability to grow. I think that the structure of the ITS program is actually a model that many of the most senior leaders at the DOT I think would like to see applied across other programs, but I mean all the other funds currently flow mode by mode. You know, this program is one of the few or - I haven't been able to find any others that flow in a cross-modal way. So I think with a model that's different than everything else, there are right now we said coordination challenges and you know, until this model is embraced fully internally and externally we just have to keep - in my view, keep pushing to demonstrate you know that in the future perhaps there would be funding for safety that would flow through a safety council who could make decisions. And I think the Secretary I think even just yesterday was talking about the cross-modal competitive structure that the new DOT would take on under the reauthorization proposal.

CHAIR SUSSMAN: So Valerie, just give us a sense of scale. You indicated that RITA has on the order of 17 slots, 17 positions. But there is a line of ITS work going on in the

modal administrations, FTA, FHWA. Would you like to guesstimate what fraction of the ITS effort is within JPO as opposed to in cooperation with the modes?

MS. BRIGGS: In terms of the budget?

CHAIR SUSSMAN: Yes.

MS. BRIGGS: Well, we did have some discussion about that last time.

CHAIR SUSSMAN: Right.

MS. BRIGGS: And I think John estimated that probably 80 percent or so of the overall budget for ITS comes from the ITS program. Because the other modal administrations have many other competing interests. So I think the bulk of the budget for ITS does come through our program. And we try to allocate the vast majority of the program to things that are cross-modal and we consider for instance the V to V and V to I program as cross-modal because it serves many modes, but then within that we do have groups that are focused on what are the applications for trucking, what are the applications for transit, what are the applications for highway. And so we work with all of those modes to, you know, to execute those parts of the program. There are also - there is also a component of our budget that is mode-specific where there are certain programs that individual modes carry out. The weather program is a pretty good one. I think you know that was a Federal Highway program. Sea Vision is another one that goes to FMCSA specifically and they execute that money. It comes through our office, we do an interagency agreement to execute the funds to their offices to carry out. But that's a small percent of our budget. And then they of course, each of the modes has the ability to augment those funds through their own resources.

CHAIR SUSSMAN: Okay. We'll get back to the funding question because I think it's important, but let's move on and we'll return to it.

MS. BRIGGS: Okay, sounds good. So we also have relationships with other federal agencies and since this was a pretty big discussion last time I included this slide. These relationships vary depending on the agency. We work - we certainly have common interests with the National Transportation Safety Board, we've had some dialogues with them. NOAA is a group that we've worked very closely with on joint research, funded jointly for our weather program. We are starting to work more with EPA and explore that relationship as well as DOE and we've also used the federal labs in a consulting capacity for many years. We work with DHS, worked with them on - we've had various ITS research related to homeland security as well as the next generation of 911 so they've been pretty active partners in those. Department of Defense, you know, there are a lot of different agencies within the Department of Defense and we have worked with some of those. It varies from just periodic discussion to some more involved joint activities. NTIA and that should be administration not association is the federal group that coordinates telecommunications issues, and so we go through them instead of directly to the FCC. We don't go directly to the FCC. And then the NIST is a group that we've worked with on standards for many years.

DR. BERTINI: We might add National Science Foundation historically has partnered with the JPO and we're trying to rekindle that.

MS. BRIGGS: Okay.

DR. BERTINI: And also the Office of Science and Technology Policy under OMB which of course we've been working on the connected vehicle technology challenges.

MS. BRIGGS: DARPA is one of those Department of Defense programs that we kind of periodically touch base and recognize we have common interests with. But you're absolutely right, and there are other Department of Defense groups that are certainly looking at

things like the driverless vehicle, or vehicles that can - that can do some of the same things that we're interested in, so. The other thing I should say is this presentation doesn't - isn't - doesn't necessarily recommend every conversation we've ever had. I tried to highlight the major ones.

We - these are groups that we work with through the Transportation Safety Advancement Group that we formed to work with us specifically on ITS. They worked very closely with the ITS program on the next generation 911 and other public safety activities, and we do meet with them periodically and have very strong relationships with all of these groups.

DR. DROBOT: So Valerie, just a question. If I were to look at let's say the previous viewgraph, of all the places that you listed and just out of curiosity, how many of them do you have an MOU with or a jointly funded program?

MS. BRIGGS: I'd say NOAA is the one, is the only one on that list that we have a jointly funded program with.

DR. BERTINI: And the first bullet -

MS. BRIGGS: Oh yes.

DR. BERTINI: - our internal partners at - and NIST.

MS. BRIGGS: Yes, that's true. Other than using the consulting from the national labs. That's kind of different. So we also work very closely with AASHTO and ITE as partners for state and local agencies and we frequently try to go out to the local chapters because we realize that you know many of the traffic engineers and other people who really need the research that we're doing aren't able to go to national meetings. So we really do make an effort to get down to the local chapter level and that takes a lot of time and energy of our staff and our partner staff. We work also a lot with ITS America and some of their local chapters. National Association of Counties is on

several of our different groups and IBTTA and we're starting to build a relationship with the American Public Works Association.

DR. BERTINI: Valerie, you may not know but on Saturday I'm speaking at a meeting of NACo in D.C.

MS. BRIGGS: Good.

DR. BERTINI: They have a legislative meeting, so.

MS. BRIGGS: Good. They've been fairly active on the V to V, V to I program.

CHAIR SUSSMAN: Valerie, in discussing the issue you use fairly general terminology. We work closely with or whatever. Could you maybe drill down half a - six inches or so and say here's what the relationship really is in fact, not we work closely with?

MS. BRIGGS: I will do that. AASHTO, we actually have consulting relationships with AASHTO where we set up - we have staff there who do work with us to review our documents and to set up stakeholder groups that will participate actively in our research. So there is a group of 10 states that have had ongoing involvement in the V to V, V to X program you know for many years since it was V to I. That was also consistent with what was done with the 511 program. I mean, they set up stakeholder groups that are - that do work with us and that takes staff time and energy and that's why we have a consulting relationship with them because they have to get their resources from somewhere and so for the staff time and energy that it takes to coordinate those groups we do support that. ITE similarly and we have had relationships like that with ITS America as well where we consider critical stakeholder groups - and APTA, I should say that too, and in the trucking community we've had some of those too. So those are more contractual sort of relationships. So many of the stakeholder groups that we've had for the V to V, V to X program we

might have had AASHTO coordinate the group but they have also involved stakeholders from NACo and IBTTA and ITE and other groups. So sometimes we'll have one organization pull in stakeholders from their fellow associations. We have a similar working group with ITE because we're trying to really increase the local government engagement into the V to V, V to X program, but local is a lot harder than state because there's no one organization that represents all of the local entities, and so it's a tough - it's much tougher to get out to the local agencies. So similarly with ITS America. National Association of Counties, we mainly involve them through other working groups. Same with IBTTA and APWA. We are starting to try to go out to some of their meetings. Do you want me to press something? Okay, thanks Charlie. The next group -

CHAIR SUSSMAN: My daughter worked - a little aside. My daughter worked as a support person for Bank of America for awhile fielding these kinds of calls and it was amazing how often she got a call that said I can't find the Any key.

(Laughter)

CHAIR SUSSMAN: Where's the Any key?

DR. BERTINI: I think that's part of our -

MR. SILL: So the solution is to mandate the installation of a key marked Any on every electronic device.

MS. BRIGGS: One thing I should say is when we start a new research program the program managers have - are responsible for coming up with a stakeholder engagement plan because we do believe that you involve the stakeholders from the beginning in planning for the research and in executing the research and then that is you know ultimately part of the tech transfer strategy is those people's involvement. And so most of the stakeholder engagement that we've done

in the past is very much focused around each program, each program manager organized it and you know, so NG911 is a good example. I mean, it has a unique stakeholder group and they pulled together all of those public safety organizations to work with them on that. And that's also how 511 was done and how we started with V to V, V to I back when it was VII. And so there were individual stakeholder groups for each program. You know now we are doing a lot more to try to coordinate those stakeholder activities and have broadbased stakeholder activities, have a common set of messages and a common set of - you know, make sure that we're coordinated across the programs really actively, and much more of our research now is you know focused on V to V and V to X which crosses all of those areas and as opposed to a bunch of really separate research programs. And so we're doing a whole lot more coordination and planning of those stakeholder engagements collectively now.

CHAIR SUSSMAN: Now you led your presentation with the idea that JPO was a research organization, that's their primary charter, we understand that. At the same time at earlier meetings we've talked about the issues of standards-setting and the issues of deployment and recognizing that neither a deployment nor a standards-setting organization, the question would be how do you enable that to go faster than perhaps some of us think it is going. So are these relationships designed to advance the deployment agenda and advance the standards-setting agenda?

MS. BRIGGS: That's part of it but we also have other activities. But I will let Steve jump in because I know he's raising his hand here.

MR. SILL: Keep in mind that we do have the legislative authority should we find it necessary to become a standards-setting organization. That portion of the Safety Rule actually calls

out if the Secretary finds that the lack of a given standard is hampering the deployment of ITS we can indeed publish - we can actually publish a standard - and put our name on it. Now, we did not use that authority explicitly, but the fact that we have it I think has given us - This authority which of course we will seek to utilize if we believe it necessary also provides us a great deal of leverage in negotiating with the standards development organizations to keep them moving along and acting expediently under whatever contractual relationship we have. So we do actually - theoretically we could be a standards-setting organization if we needed to.

CHAIR SUSSMAN: But in practice you haven't seen the need for that.

MR. SILL: In practice we've chosen not to. The line above that in the legislation says the Secretary shall work with the standards development organizations. So our first - our first action is to with SDOs. Only if that shows itself to be insufficient are we to take the action of publishing our own.

CHAIR SUSSMAN: Okay, thank you.

DR. BERTINI: And I think we take seriously the fact that research - the product of research is not a report that sits on a shelf or on a website that through - as Valerie said, from a beginning, the inception of the ITS strategic research plan the idea of having stakeholders at the table and actively involved in defining the plan and including the outreach and education and technology transfer components which are also part of our mandate as the ITS JPO plus something we haven't really mentioned yet, the bully pulpit as I would call it where we all are out there talking about not only the research but also the transfer of the research results into deployment. And I've been talking a lot about taking old results from the past 20 years that we know are good and making sure that the smaller public agencies out there who may not have any staff you know have access to

these results and can help sort of push those things over the threshold.

MS. BRIGGS: The other - we have historically since this program was started done field trials and field tests and model deployments and that is also an important part of tech transfer. And safety pilot is the next generation of that and clearly our stakeholders want more. I mean, clearly our stakeholders would like more of those field trials and model deployments, and they would like more support in deployment and there is more needed in this area but you know, everyone works within a set budget and so we feel like we have - we do have a budget specifically for tech transfer and in addition each program is responsible for making sure they have the broad stakeholder engagement and as I said we're doing a lot more to coordinate that within the office now to make sure we involve stakeholders throughout the process and to make it easier for them to use the research results.

CHAIR SUSSMAN: So let me paraphrase to make sure I got that right because it seems to be very important. You're not a deployment organization, you want to be in support of deployment. You're constrained from how much support you can give deployment by budgetary concerns and numbers of slots and people you have, and the stakeholders out there are clamoring for more support, and you're unable to provide it even though they really want it. They really want it to happen.

MS. BRIGGS: Yes, I think you know historically people have always said there needs to be more testing of technologies and ideally every state would like some little test in their state so they get to fiddle with the technology and see how it works or the application or whatever it is. But yes, it's just not possible to meet all of those needs, so yes.

CHAIR SUSSMAN: Okay, that's very helpful, thank you.

DR. DROBOT: So Valerie, when I look at these lists I think there are a couple of things that sort of come through. If I look at the program you are very heavily dependent in this program on communication, information technologies, things along those lines, okay? In my experience there is an agency called NITRD which in fact specializes and in fact coordinates federal research in those areas. Have you folks ever talked -

DR. BERTINI: You brought this up in January and actually we are looking into that. We're familiar with - as RITA we're familiar with the organization. DOT is not a member, but we're looking at becoming a member because we think that we agree with you and that was a very valuable effort.

DR. DROBOT: Because I sort of look at what's on their deck and they're actually coordinating all the federal research in cybersecurity, things along those lines, that's one. The second one is networking essentially.

DR. BERTINI: Exactly. We're looking to get Peter on an agenda, an upcoming agenda.

DR. DROBOT: I think it would be super if you did that, absolutely.

MS. BRIGGS: I agree. Yes, thank you.

CHAIR SUSSMAN: Please repeat the name of the agency.

DR. DROBOT: It's a White House agency and it's called NITRD, National Information Technology Research and Development coordination councils is what it stands for.

CHAIR SUSSMAN: It's an office of the White House or it's an independent agency?

DR. BERTINI: It's coordinated by one of the federal agencies and I can't remember

who.

DR. DROBOT: It's OSTP actually coordinates you know so it reports through OSTP and to the White House essentially.

DR. BERTINI: The thing I've learned is there are lots of - when I first came to RITA they have all these ways of inviting you to these OSTP meetings and you know, at some point you have to figure out which ones are the ones that you can really get engaged with. This was one that wasn't on our list from the past administration that we want to add. You know I think personal preference in the past dictated kind of what committees RITA leaders were involved with based on their personal experiences and interests so you can imagine that there are a lot of competing calls for these kind of things, but we agreed that this group is one that we will -

DR. DROBOT: So that was one. The second one that really stands out and I think you'll find there's a woman named Jeanette Wing and Jeanette runs what's called the CISE, C-I-S-E, directorate inside NSF. And she has a major program called Cyber-Physical Systems and again, a lot of what you do falls - I'd say is in the scope of the research being conducted in that program.

DR. BERTINI: Yes, we - so let's say - I'll use the word "I" for a second. When I came to this position strengthening or reestablishing connections with NSF was one of my goals. You know, there are three or four places across NSF that are of interest to us. Frankly, there is the education element, there is the more traditional civil engineering element, there's the operations research element and in the computer science area the CISE program is one of them. Again, maybe it's a resource issue but we haven't yet had these big meetings. We've had several more informal meetings, but exactly how we bring NSF to the table with us I would like to in the future do some joint calls for exploratory research. We have an exploratory research element within our program

so under my - on my to-do list I think it is strengthening our ties with NSF and tapping into the research that's going on through their much larger research program than ours.

DR. DROBOT: Four hundred million bucks.

DR. BERTINI: Exactly. But I think it's an opportunity for us to leverage internally in the federal government and that's something that I'm -

DR. DROBOT: What was interesting is she actually - from the Cyber-Physical Systems actually had a meeting with an auto industry, they set up three meetings and you know, from what I understand all the auto companies participated.

CHAIR SUSSMAN: I would mention that the new director of NSF is a man named Subra Suresh who came directly from being dean of engineering at MIT to that so at least he might answer my phone calls.

DR. DROBOT: But, okay. No, those two just stand out, they're so close.

MS. BRIGGS: Great. Yes?

MR. VONDALE: Question. These organizations look like they are all or mostly U.S.-based. Do you have a slide coming up - are you going to talk about your global - I know you're active globally.

MS. BRIGGS: You know, I don't have a slide but you're right, we are active globally. We have MOUs or MOCs actually, memorandum of cooperation, with the European Commission and with Canada and with Japan. So those are the countries that we do have formal research agreements with and so we are quite active in that. I'll actually let Rob or Steve jump in with a little bit more information about those.

DR. BERTINI: I think with those we emphasize sharing the research results. We

don't - I think it's safe to say except maybe with Canada we don't - no funds change hands. So it's - those are commitments to share information and we have selected some specific areas to focus on with the European Commission there, some specific let's call them projects that are projects on both sides that are moving in parallel but we're sharing results as we go and the notion of standards is a thread that's woven through all those cooperative efforts.

MR. SILL: In the standards arena we have the agreement with the European Commission we're actually seeking to get their written agreement to jointly undertake certain processes to provide incentives to harmonize since they, like we, control the power of the purse to some extent to expand its development organizations and just one last international agreement. We did recently sign an agreement with ETSI, the European Telecommunications Standardization Institute, which is a major SDO working on their cooperative systems standards program. This is just a few weeks old. We do have a memorandum of cooperation and primarily for information-sharing. For the most part we don't agree on much so it really is mostly information-sharing.

DR. BERTINI: In addition to - I mean we have the formal memoranda, but as you know, just like in the U.S. government we've been talking about all the different little slots, you know, our memoranda are with specific entities within those three organizations. But there are many other entities, for example in Japan there are several federal agencies who are dealing with transportation and with communications and with technology and so for example last fall when we did the exchange of the documents with the Japanese Ministry of Information Transportation and Tourism we also met with other ministry staff who were interested. And the same thing with the European Commission, we work with a particular research organization called INFOS, Directorate for Information Society, but there's also an overall research directorate within the European

Commission. There's what they call MOVE, the overall transportation policy-setting organization. So we talk and coordinate with them and sort of work with I guess it's safe to say, we have regular touch points where we communicate with those other organizations.

MS. BRIGGS: Yes. We've also had a Japanese fellow for many years, so someone that's actually from the Ministry of Land Transport working at Turner-Fairbanks on ITS issues, so.

DR. BERTINI: And I think next year we expect a staff member from the European Commission to be in residence at DOT for a few months and this summer we're planning to send one of our staff over there as well.

DR. SWEATMAN: I guess one comment I had is these are fairly impressive long lists we have under each of these sections here. And it would be interesting to hear a bit about the strategy used as to where the priorities are, you know, who the key organizations are in each group here. But also I guess overall ITS started out on the highway side and has kind of migrated much more towards the automotive, and so we had NHTSA here yesterday which was great and also NHTSA have a particular and close relationship with the automotive industry. But I wondered how does RITA see that and how do these relationships change over time? I'm thinking particularly of the highway sector and the automotive sector and you know, we originally had vehicle infrastructure integration and so I just wonder how - what the strategy is to sort of bring this together more and particularly on the automotive side.

MS. BRIGGS: Yes. You know, that's a great question and I will say, it takes a great deal of time and energy to do this level of coordination. I mean, this is - it takes a lot of time. But it's what we have to do. I mean, it's how the research gets - how we make sure we're doing things that are needed and how the research gets out there. We do have a very good strong partnership

with the auto industry and we've done the same thing there as they did with public safety which is we've formed groups to work with us, or we work with those industries to form groups to work with us. And so we have - NHTSA, there was a group called CAMP that formed to work with NHTSA and that's Crash Avoidance Metrics Partnership and it included several of the auto industry - it included Ford, GM and several other automotive partners. And they do very technical research and it's - we actually have a cooperative agreement with CAMP to do joint research with the automotive industry. And so there are Ford and GM engineers working on this research and those from Nissan and the other members. There - we also have a partnership called the VII Consortium which is - there are nine automotive companies that are members of that consortium and we have a cooperative agreement with them as well and they focus more directly on the policy issues associated with the V to V and V to X program. And so we work very closely with both, they also have many integrated cross members and so we make sure that they're - we work with them to make sure that the efforts are coordinated between those two groups. And for instance, I meet with VIIC weekly and then often - more often than that. We do quarterly meetings with them in person because they are executing parts of our research program. We're doing it jointly through cooperative agreements. So that's a very strong partnership. We've also had similar partnerships like that with members of the trucking community and transit community, and so I have them on other slides, but there have also been partners, similar partners there. We do have - like I said earlier, we have contracts with groups like AASHTO and ITE on the highway side for courting those state and local agencies. We have had contracts with ITS America in the past too. But you also hit on a point that is we used to have a kind of core set of primary stakeholders and now it's much broader and it's a much greater challenge. We can't just go to one organization and say gather

the right people for us. So that's why you see this private sector list that now includes CTIA and CEA and OmniAir Consortium which are all groups that we have not worked with in the past but we recognize we must work with them so we're going to their meetings, trying to meet people and start those relationships. We've worked with several of these groups, NEMA and IEEE, SAE, it's not listed there but another group that we've worked with on standards and we actually again have cooperative agreements with them to do joint standards work to advance standards.

DR. BERTINI: There's also SEMA.

MS. BRIGGS: Right. They're on another slide too, yes.

DR. DROBOT: So Valerie -

MS. BRIGGS: Yes.

DR. DROBOT: - help me with following - if I got this correct. You have 17 people

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MS. BRIGGS: Yes.

DR. DROBOT: - in the organization. If I look at all of these lists okay and I count them, you know, I mean I wonder how deep a relationship you can have and how much activity there actually is per organization.

MS. BRIGGS: It's very hard, it takes a lot of our time. Now, I will say some of these relationships -

DR. DROBOT: I'm actually wondering about the following.

MS. BRIGGS: Yes.

DR. DROBOT: Do you in fact - I don't think I see anybody on these lists okay that shouldn't be there. In fact what I see are things missing that aren't there and you know, I mean in a

very serious way I wonder whether you have enough resources to actually do what needs to be done. Because part of the game in a field like this is this kind of broad outreach and coordination.

VICE CHAIR DENARO: Let me ask a follow-up question. How is this done?

You say we -

MS. BRIGGS: Yes, I was about to say -

VICE CHAIR DENARO: Is there one person for both - these four lists?

MS. BRIGGS: Well, my team - my team does try to coordinate these whole lists.

We don't do all the stakeholder engagement ourselves. So, what we try to do, we keep a calendar, we have someone go through and look at what meetings are upcoming, we plan the messages. We do have to coordinate the approvals of the presentations. We have resources for assisting the program managers. But is it often the people, the other 16 members of the organization as well as our partners in the other agencies who do some of this coordination and outreach. So particularly the automotive work, a lot of that's done through NHTSA too. Speaking, we send out our staff when they're available or we send out staff from the other, you know, Federal Highway, FTA.

DR. DROBOT: So if I were to look at sort of your core program and its elements, do you have a map somewhere of where each of these organizations touches you, and what's a priority and what's not?

MS. BRIGGS: We do. We actually have a stakeholder engagement plan and I'm sorry I didn't bring it, but we do. And that's new. I mean, that's something that we recognized two years ago and said we've got to coordinate this better. And it is a challenge again because you often feel like you're just responding to requests. But we do have a stakeholder plan and we do try to be proactive in planning who else we need to reach out to. One group that's you know that we haven't

talked a lot about, I think they may be on here somewhere, but National - I'm sorry, there's a Governors Highway Safety Alliance. I mean, there are a lot of different safety groups that - we're going to a lifesavers conference which is happening very soon. Recognizing that there are other groups that are very interested in this space. I mean, at some point we're going to have to start looking at groups that are like AARP or others who have niche interests. The disability community is very interested in what this can do. But we have said we just - until we have this research proven it's not the right time to go out to these groups and we don't have the resources. So we do make choices regarding who we reach out to when based on our staff resources available.

DR. BERTINI: I can add also real quick outside of JPO within RITA we have a public affairs office. It's six or seven people but we work - we in the JPO work closely with our government affairs - government international and public affairs and they do support us. The international agreements, they help prioritize Administrator Appel's schedule and response and requests and get him programmed places where he can hit the message to large audiences that he wants to hit. And one of the things that he - is a theme with him and maybe he's talked about this is getting let's call it the ITS community and let's call it the safety community and getting them together. And he loves to do that and to identify places where ITS people aren't talking to safety people and vice versa. So that's been a theme with him over the last several years in trying to be quite vocal and visible about that. So he helps us set our priorities because we do have to prioritize by virtue of the administrations interests and priorities. But as Valerie said, you know, there are a lot of groups who need and want to understand what we're doing and we try to economize as much as we can by touching large audiences and leveraging gatherings in places where you know over the last several years we've had a number of workshops aimed at helping launch our strategic plan and

we've very often leveraged the locations and times of those workshops with other gatherings where we know that our stakeholders are present. The ITS America annual meeting, the World Congress, we always are working - TRB, we're working to leverage those things.

MR. OSTERBERG: My experience with the programs while perhaps not of this scope but not dissimilar is that in the early stages you're really in a diverging mode where you're opening the aperture and you're bringing in stakeholders that may have an interest in the spirit of kind of scoping and kind of bringing in as much interest. At some point and in my experience you have to almost designate that point we're not going to diverge anymore, we're going to start to converge on actions. And I think what Peter was saying, you know, the stakeholder analysis to say not all stakeholders are created equal, which are the ones that are going help us to provide - and what are the action agents. And then even another layer of the stakeholder analysis, how do those action agents make decisions? Because in my view one of the responsibilities of the research community is to provide decision support and you have to understand how they make decisions in order to be able to provide them with something that they can use to effectively make decisions. Lest we exist in this perpetual state of divergence and we just keep adding more and more people. I just - I don't know where that point is, but I know we're going to talk a little bit this afternoon about how we kind of get this thing focused to connect down -

MS. BRIGGS: Well, a couple other things. I'm giving you all the stakeholders for all the programs that we work on. And so for each program there's a subset of these stakeholders involved. So for instance public safety, they were most actively involved in that NG911 initiative. You know, they're not necessarily the core stakeholders we work with every day on V to V and V to X though we recognize they will have an interest in that. So there are you know core stakeholders

for each program and those are identified in each research activity. So we do do that. Another thing that we have to abide by is federal rules regarding how groups can give input to the federal government. And so we actually cannot set up a decision-making group unless it's a federal advisory committee and you all are the only federal advisory committee we have. So when we go to get input from our stakeholders it is an input process, not a decision-making process. So we have public meetings where people give us their ideas and inputs but we don't ask our stakeholders to make decisions on a program.

DR. DROBOT: No, but I mean the end result is you in fact use that material to help others make decisions.

MS. BRIGGS: Oh absolutely. Yes, we take that material and digest it.

DR. DROBOT: I think that's what I heard essentially.

MR. OSTERBERG: Yes, precisely. And I guess the other - just the last thought about the stakeholder analysis. You know, sometimes in my experience there are degrees probably on the low end, I need to communicate to you what I'm doing?

MS. BRIGGS: Yes.

MR. OSTERBERG: Another degree maybe I'll try to de-conflict what I'm doing with what you're doing. Then you get to some that we may want to synchronize what we're doing and then kind of the highest end in my lexicon is kind of the integration. Sometimes I think we try to integrate things that don't need to be integrated, that we try to over-engineer the solution that's going to please everyone. In my experience it's what causes this glacial pace of change and it's the antithesis of the kind of agility that I think we need in light of the rapid pace of technology development and other things. I just think that as I listen to you describe that, and I absolutely

understand the restrictions that we're under it's no wonder that it's difficult to move something of this magnitude at a pace that's someone like me would find acceptable.

MS. BRIGGS: Yes, those are very helpful points.

MR. OSTERBERG: It's probably a pontification on how helpful it is. I feel your pain but at some point we've got to take an appetite suppressant I suppose.

MR. KISSINGER: On the safety side, let me add another group that I don't recall seeing. The Highway Safety Partners Venture which actually is an unofficial sort of advisory committee to DOT. It's administered out of Federal Highway but most all of the modal administrations show up. We meet about once a quarter. There's probably 30 or 40 stakeholders that are officially a member and usually we get you know 20-some organizations, and usually it's - you know, it's always in Washington and it's two or three hours. I think it would be worth at least showing up for one or two to determine whether it's worth your time.

DR. BERTINI: Or maybe getting on their agenda.

MR. KISSINGER: Yes.

MS. BRIGGS: Okay.

CHAIR SUSSMAN: Valerie, there are a couple things that struck me as missing although perhaps they're simply implicit in the way you do business. I didn't hear you mention the Congress as a stakeholder. In fact, the Congress is a player in terms of resource allocation. I remember back in the earliest days of ITS Senator Lautenberg of New Jersey was a tremendous supporter. He has now returned to the Senate for a second set of terms. He was extremely supportive. I can recall meeting with him back in the mid-'90s on this topic. So the question of champions within the Congress, the House, the Senate seems to me to be important. And on a more

micro scale within the RITA family you also have the Volpe Center.

MS. BRIGGS: Oh, that's true.

CHAIR SUSSMAN: With a lot of active professionals that are interested in this area. So I'd be interested in your views on both of those.

MS. BRIGGS: Well, I'll let Rob respond to the view on the Congress, but I will say with the Volpe Center, Volpe is basically a contracting arm and they have great resources there and we use them extensively in a contract capacity. So we do have agreements with the Volpe Center and essentially many Volpe Center people are a god expansion of our small staff in many ways. I work extensively with them on the policy activities and so yes, we use Volpe resources quite extensively.

DR. BERTINI: And really they are an extension of our staff, they're part of the RITA family it's just that financially they're under specific interagency agreements. But clearly the Volpe Center houses a great team of staff. I think all of you probably know Suzanne Sloan who's been sort of our strategic plan guru. Jane Lappin, she's the chair of the TRB ITS committee but she's also been our international cooperation guru. And Gary Ritter actually was just appointed as the head of the - I can never remember the name of these offices within the Volpe Center because they're too long, but basically the ITS department of the Volpe Center. And so we do have a strong team there.

CHAIR SUSSMAN: Not only are the titles too long at the Volpe Center but they change them quarterly, so it's a little tough to keep up.

DR. BERTINI: I asked Bob Johnson come up with one-word names for each of the

departments there.

CHAIR SUSSMAN: And leave them alone for awhile.

DR. BERTINI: Regarding Congress, again we work through our governmental international public affairs office. Certainly on one hand we respond to requests so we do get a lot of requests and this has been the budget rollout, the season for the launch of investigations and hearings and so on and so I know we've had several discussions with - so there's the transportation committee. There's also the science committee on the House side who's very interested in research and we will be doing in our - in RITA's role as a collaborative - as a coordinator of research across DOT we will be holding a pretty significant meeting with House science staff, bringing in all the modes of transportation in the very near future. We're of course working with the GAO as you mentioned earlier on an audit of our program. We try to be also proactive with the congressional committees and the members of Congress, and so Peter periodically visits various offices when we have something to share. So it's a combination. Of course we're required to submit a report to Congress on the ITS program. We have to - again, it's a whole element of coordination within the Department of Transportation where the DOT congressional affairs office and so everything we do with Congress is in close cooperation with larger DOT priorities as well. But we do - I'd say it's safe to say we have an active stream of communications back and forth with members of Congress and their staff.

CHAIR SUSSMAN: Scott is much more tuned into these kind of nuances than I am, but it strikes me that with the pressures in Congress to cut budgets and save money and so on and so forth but their interests in continuing to see economic growth in this country, that potentially ITS is not a bad card to play that you could say here's a way of buying the capacity we need for

productivity improvement but without bridges to nowhere. And I wonder if the administration has picked up on that opportunity?

DR. BERTINI: I know that within the Department of Transportation at very high levels there is deep appreciation for that. I think Scott actually joined John Augustine and me in some meetings with the assistant secretary for policy and we discussed that, and I know that that is woven into the flavor of the reauthorization proposal, that we want to look for opportunities. There may even be some language in there, I would have to go back and check now, but I believe there's even some language in there about looking for ways to gain efficiencies through operations. So yes.

DR. SWEATMAN: It seems sort of unusual given that that the RITA budget is kind of flat and everyone else's is proposed to go up. So that doesn't kind of -

DR. BERTINI: Yes, on one hand it's flat, on the other hand you know - the wireless initiative which really came from the White House, the \$100 million for integrating wireless broadband with intelligent transportation systems. So we see that as an increase and I guess - so we're glass half full kind of people about the budget situation because there are so many pressures. We still think that moving forward we have some exciting opportunities again to leverage more cooperation with other federal agencies.

MR. BELCHER: Well I think in the glass half full way of viewing the world even if you look at the Republican proposals to cut the federal budget by \$63 billion this year, the RITA and in fact much of DOT goes unscathed. I mean, the big chunks are in the President's priorities around high-speed rail and some other initiatives, but you're not seeing - I mean, you're not seeing the growth that we need to really bring our transportation system into a state of good repair, but you're not seeing the kind of draconian cuts that you're seeing at the Environmental Protection

Agency, that you're seeing in Department of Education which are all high priorities for this administration. So I think if you want to view the world through the glass is half full that's the way to view it. And then if you look at the President's priorities for transportation, I mean you're seeing a proposal that may - I'm not going to characterize it, but it is in fact a doubling of the current allocation for safety though and it has a number of really innovative initiatives. And the other thing you know, I mean - I asked Rob kind of a question to hear his answer which I knew, but I wanted you to say it for everybody else. The other part of this story again in the glass half full is that ITS doesn't just happen in RITA, it happens at FHWA, it happens - and there is a number of places where in the administration proposal there is openness and there is incentives to invest in systems operation and ITS. So in a way that didn't exist in safety loop. And so I think if it is in fact a dramatic improvement. I think you know if you look across the whole transportation.

DR. BERTINI: Maybe - I mentioned three other pieces of RITA's proposed budget that could be ITS-related in the Bureau of Transportation Statistics we see a budget - proposed budget increase for safety data, a safety data program which of course would have to be linked to ITS. There are two \$20 million proposed programs under RITA. One of them would be - both of them would be multimodal with a management council structure like the ITS program. One \$20 million per year set would allow the DOT leadership to set research priorities in real time, target those funds to a set of competitively selected university transportation centers that have another \$80 million of baseline funding. So there's \$20 million per year that includes verbiage in the more detailed descriptions that probably haven't been released yet about advanced technology and so on, so certainly would not exclude other ITS-related research. Then there's yet another \$20 million program that would be competitively awarded under a multimodal, cross-modal council structure

that could be targeted to any - would be competitively opened to any entity, university or lab or private sector who wanted to compete to conduct research in certain areas that of course would not exclude ITS and operations and the research questions that could cut across the entire DOT. So those would be two programs for the first time in a way that would target research funds beyond ITS in a truly multimodal way which could be opportunities let's say for you and for us.

MR. OSTERBERG: Kind of to the point to at least offer one of the things that I think I've seen and I spend a fair amount of time on Capitol Hill is that researchers cheerleading for more research funding may get their attention, but end users that can say I see value and I can see application of what it is, I think it carries a bit more weight. So if there's anything that we can do to perhaps join you in some of those. We can get an audience with about anybody that we want to have an audience with so if we do an analysis of these are the players that we think can help us, that are predisposed perhaps you know, love to - and it doesn't have to just be someone like me but if we get someone from the railroad or whoever to actually go in and say this isn't just theoretical stuff, this is - we see the opportunity and the benefit. I'd just offer that, if we can help.

DR. DROBOT: You know I mean it's actually a very good point because the nature of the research that we do is really very applied. And I think if you can get that flavor across in terms of -

CHAIR SUSSMAN: Excellent thought. Thanks, that's a great suggestion. Sure of course, please.

DR. SWEATMAN: So I guess we've kind of - we haven't crossed any of these organizations off these lists. We've added a few more. And it just seems impossible for RITA to be constantly working actively with all these organizations. And just thinking back to where we

started out on how to accelerate deployment of ITS we could do a one-time effort to you know maybe do a forum in each of these key areas, get all these folks in the room in each of these areas just on the question of how do we accelerate the deployment of ITS. Because at least that way you could see where - I think more obviously where the barriers currently are and I guess also to find out who the key strategic partners really are. So I guess I'm thinking clearly you can't do this all the time, it's just impossible, but maybe a one-shot effort might be very helpful.

DR. BERTINI: Maybe it would be worth mentioning that next month I guess at the ITE we'll be launching, in the spirit of the administration's emphasis on challenges and competitions, a video challenge on ITS deployment where actually RITA and FHWA and FTA are cosponsoring it. AASHTO and APTA and ITS America will help us in the judging and the sorting of the let's say large number of videos we hope we get. But the idea is we want stories from the deployers and how have they deployed something in their community or their region or their state or their organization, whatever it is. We want the person who was responsible for that success story to tell their story so that other people can call them or email them and get more information about how they did it. So we think that that will help set the tone and make it clear that we're interested in accelerating deployment and maybe that's something we can build on for some next step. I don't think we know in advance what we're going to get, but we think the fact that we're asking people to tell us their stories is a first step and perhaps some sort of larger forum building on that would be a logical next step.

DR. SWEATMAN: We probably also need to understand the dark side a little bit. Because there may well be some organizations in this list who have agendas that are not - that are orthogonal in some ways. So it's good to know.

MS. BRIGGS: Another thing to keep in mind. We do a great deal of public meetings and we've started doing a lot of public meetings for the V to V, V to I space where anyone can come and we get a lot of people. And so that is something that we have practiced. We have done kind of open meetings for all of the programs that we've had that allowed various stakeholders to come together and give us inputs on how do we do that research and how do we execute the next steps of it. Another thing to keep in mind is that it's really tough for people to travel these days, especially public agencies, but everyone has travel restrictions. And so it's getting harder and harder to do public meetings and we often have to pay for the travel for state and local agencies because they aren't going to get to do it otherwise. So it's pretty tough to do a big public meeting with a lot of different groups too and that's why we go to various groups and try to do things at their events where they're already attending.

MR. KISSINGER: Can I ask a question? I mean, I guess I'm just - I'm looking to Scott because you know when your predecessor organization is set up I think very much in the context of the big tent to do a lot of this stakeholder involvement and perhaps to an extent that even the DOT can't you know. I know it's evolved somewhat away from that, but I guess I'd be interested in just your perspective because it seems like virtually everybody on that you know these last couple of slides could theoretically or are already members of ITS America. And I know you guys work together, but I guess I'm not sure exactly how close or if you - where lines are drawn and does Valerie call you up and say we just can't handle this, can you? Or how does that work on a day-to-day basis?

MR. BELCHER: I mean, I think - I guess I have two comments. I mean the first thing and I was going to say this before separate from ITS America is I mean 17 people, but the

joint program office operate and does a lot of its work through these partners. And so AASHTO will be an advocate through the state DOTs, we'll be an advocate and in fact we are kind of an advocate on a lot of the things that is kind of not within the joint program office purview. So we're up on the Hill you know, deployment is a very major issue for us and so that's an area where we're out there. With respect to kind of the JPO-ITS America relationship we do have the big tent, we do - there are a number of areas with which we do work very actively with the joint program office. Valerie mentioned the stakeholder meetings. Well, we tend to be the ones who set them up, do the outreach, organize them and again, I think largely because it's easier to go through us to get to many of the stakeholders because they are, you know, that way Valerie doesn't have to go to AASHTO, ITE, APTA, she can go through us and we'll go do that. I think what you've heard though is that even our tent isn't big enough anymore and so you're seeing unique relationships now with CEA, with TIA, CTIA. We're - ITS America is getting more and more of those people participating in there, but I think what, you know, what the JPO has found is that in some of those areas we're not as deep as they'd like and that's fair. I mean, and so they've established additional relationships. So I think we have those relationships. I don't - I'm not sure.

MS. BRIGGS: And I'll jump in here. We value our relationship with ITS America very much and we do a lot of stuff with ITS America, but when we are going out and trying to get the vast majority of state and local - or local agencies in particular to understand this, the traffic engineer in Paducah, Kentucky for example. You can't expect them to come to our tent. We have to go to their, where they already are. And so while ITS America does have a lot of members from a lot of different groups, it's not - for instance, the primary organization perhaps that all of the transit agencies are part of. So we still need to go to APTA and CTIA. And so I think that we can't expect

- and it's not ITS America's role to replace those, but when we are looking at you know a more deep dive on who are the core stakeholders who are interested in a specific subject we often do go to ITS America.

MR. BELCHER: I mean, our problem is that you know we have - we have the people who get it. I mean it's like most transportation groups, we've got you know so if you look at our membership list we do have - I mean in the transit world we've got the John English's and we've got the Linda Watsons and you know we've got the transit groups that get it and are using technology, but that's not really who we need to be preaching to often. And so that's why sometimes it's better to go to APTA to go deeper to get to those, the transit engineers. And similarly you know in the telecommunications space we've got Motorola and Qualcomm and AT&T and Verizon but then you go much deeper than that and it drops off.

DR. BERTINI: I think we've talked here about how we're good at talking to ourselves and so the challenge is to keep doing that as necessary but also for us in a unified way to help communicate to the others who need to understand what we're doing.

MR. BELCHER: But we'd like to do more.

DR. BERTINI: As Valerie said, we work closely with ITS America, but we also are committed to their success as an organization and that's something that Shelley and I and Peter you know are - believe in strongly.

CHAIR SUSSMAN: Valerie, I suggest we let you move through the several additional.

MS. BRIGGS: We've talked about a lot of these others. We do have relationships also with APTA, CTIA, American Trucking Association and Commercial Vehicle Safety Alliance

for specific activities. We work with the auto companies which we already discussed. SAE does a lot of standards work with us. The alliance on the international - the Association of International Automobile Manufacturers are big groups who we don't work directly with but they are involved in our stakeholder groups for V to V and V to X and SEMA as we already mentioned which are the after-market folks. And then we also work a lot with the university transportation centers and the Transportation Research Board. And I think that's it for the stakeholder list.

CHAIR SUSSMAN: Can you back up one please? So just to make sure I'm nailing this, when you're talking about say private and the automotive industry, key listed associations, trade associations and the like, but do you have any specific outreach to individual major manufacturers?

MS. BRIGGS: Oh yes. We met yesterday with several of them, but we - those - that first group, CAMP and VIIC are made up of the major manufacturers and they exist to work with us on those programs. So they're organizations of the major manufacturers who do directly work with us.

CHAIR SUSSMAN: Your primary flow is through these associations rather than going to visit Ford and General Motors and Chrysler.

MS. BRIGGS: We talk to them anytime they ask us to and we, I mean we were meeting with -

CHAIR SUSSMAN: I'm not finding fault, I'm just trying to nail what you do.

MS. BRIGGS: I think it's safe to say we do both.

MR. VONDALE: Maybe I can add something to that because I've worked in this area for about 30 years now and I've never seen closer cooperation with the industry. And when

you look at the first two, the VIIC and CAMP, that is a model for cooperation with the industry. And it's not just talking, it is working with directly the engineers and some of our most talented engineers to work on both the technical aspects of this and the policy issues. And from my perspective you know much of the progress we've made has been through the technical work of CAMP and the policy work of the VIIC. So it is - it's a good question, but I can assure you it is a very powerful and strong relationship that is continuing to work. I can't think of a situation in 30 years that's even come close to the cooperative effort that's been going on and will continue to go on there. And because of that relationship to me it brings in a lot of other support as well that's associated with. Now, can we step it up? Yes, we're going to keep stepping it up because we want to try to improve on what we've already got, but it is - it's working very well.

DR. BERTINI: I think also one other angle that has been discussed and I think Jim, you and Peter and I have talked about it, that engineers and the researchers through CAMP and VIIC are sort of one thread of industry, but what we've also been trying to do is ramp up the conversation with other levels and other entities within the auto industry for example to make sure that there's a broader expectation of what's going to be happening in the future. And that's something that Aneesh Chopra has brought to us, has been pushing us to do to make sure that we're just not you know again talking to one narrow slice within the industry.

MR. VONDALE: And I can tell you, you know, it's been made clear at Ford for example that this is a real program and that it is going to - it's going to happen. And we have confidence it's going to be successful ultimately. So I think it's changed from you know something that was a pie in the sky a few years ago to something now that is a real program. And so we're throwing a lot more resources at it and Peter talked about yesterday the PR. We're going to be

throwing a lot more PR at this too because we think it has a lot of benefit in that respect. So it really is something that has a lot of potential today and even more potential tomorrow.

CHAIR SUSSMAN: Just following up on that, that's a quite positive story. The question I would have is as you said you've been in this business for 30 years and many people around this table have comparable length of service, what is it about today that's making that happen? Why has that kind of cooperation, traditionally very difficult to develop, all of a sudden quote unquote "all of a sudden" taken root and seems to be advancing? What's going on?

MR. VONDALE: A couple of things. One, I think the funding that's coming through to the CAMP and VIIC efforts is absolutely essential. All the vehicle manufacturers are really stressed right now and have been stressed and the funding that's come through during that period of time has allowed us to not only keep up with the work but actually accelerate it. And I think once we start seeing the fruits of the work that's been done over the last several years particularly in the area of research and we've been able to finally get the message to some - it takes time to turn something that's a research project into something that looks like it is a real - a real thing that is ultimately going to bear some fruit. And so it's that. I think also, and it's something I think we all need to be thinking about and doing, and we talked about it you know a few years back with AASHTO. You know, we're looking at this as a transportation-related issue, but it crosses so many other boundaries. If you want to talk about healthcare reform, this is the program that probably offers the greatest healthcare reform opportunity around because when we're successful here and we start eliminating large percentages of crashes the number of - the amount of healthcare that is spent on vehicle-related crashes is enormous. And so I think we need to be looking at this, and the way we're looking at it at Ford Motor Company is that this is a societal benefit in a much broader sense

than - and I'm just talking about the safety side. There are so many other opportunities too as we move into this. So I think one of the things I thought was really important that Jim Buczkowski said last night is one of the ways to really accelerate the deployment is not to look at it like we have to wait until we've got everything in place before we start moving on the deployment. That's not the way we operate in the auto industry and so we need to use the information, the techniques and the processes that we have to find ways to implement this program in stages so that we can accelerate. Because ultimately I think all of us believe that - and I know it's felt at the highest levels of my company that this has tremendous opportunities.

CHAIR SUSSMAN: Yes, Joe, please.

MR. CALABRESE: Just to tie off of that. We can't do anything without adequate funding and I'm sure this has been done and you probably have it in your notebook, but you know, do we know what money can be saved by more investment in ITS? I mean, we really I think - because the politics wants us to and because the financial situation is forcing us to be more cost-effective. You know, what is the return on investment? If we can through better ideas put more throughput on highways, you know, can we avoid building more lane miles, can we avoid maintaining more lane miles? If through the same ITS we could improve the throughput so there's not a 5-minute delay when the trains merge in Washington and we could have closer headways and handle more people and again, reduce traffic congestion, you know, and have a safer - I mean, do we know what the cost-benefit is? Do we know that by a \$100 million investment we can save \$4 billion? I mean, that's how we have to sell it. Do we know those numbers?

MS. BRIGGS: I can jump in. I'd like to respond to both of you. And so I'm first going to start with what I was going to say after Jim's comment. Right now the V to V, V to X

program is heavily focused on auto industry coordination and cooperation, but every research program we've ever had has had that level of coordination and cooperation with whatever the key stakeholders were. So I'm going to give IVBSS, that was the in-vehicle safety systems, autonomous safety systems. They worked very heavily with the heavy carrier industry in the same capacity that we now work with the automotive industry. So I would say that our relationship with the automotive industry isn't unique. We've had those kind of relationships with the other industries that we've done research with. So I just wanted to make sure that we made that point.

In terms of the benefit cost, since the inception of the ITS program we've had a heavy evaluation component. Every research program has to be evaluated and both to understand the success of the research and to estimate the benefit cost of that ITS program. So we have an extensive database of benefit cost information. It's up on our website, we also produce various reports on that, but it is very difficult to roll those up and quantify them on a societal level or on a level that is meaningful to a specific individual. And so that's an ongoing challenge of the industry and I'm, you know, Scott can jump in here too, but I think that we have done as much as we could think of to try to collect the core information that gives benefit cost information about specific ITS applications. And that is all publicly available through our website through a database that we've invested quite a lot in to try and make it as user-friendly as possible.

MR. BELCHER: I think Valerie's right to some extent. I mean, I think there is - there are cost-benefit analyses that have been done on specific projects, you know, and we do have statistics about return on investment ratios on specific deployments. But the data is thin and it needs to be better.

DR. BERTINI: And we need compelling stories. And this is - okay, this video

challenge is a zero cost thing for us except a little bit of time and create a website, but it is in the spirit of what you're talking about. We need the stories and I'm going to sort of say let's call them more traditional ITS technologies. I think on the connected vehicle research that we're doing clearly the goal of our program is to provide NHTSA with a benefit cost, with the tools to conduct their own internal benefit cost analysis for a potential regulatory decision for light vehicles and heavy vehicles. So that's been the hallmark of this program and continues to be. I think the piece that we need to work on is converting the technical reports and results, you know, research reports into stories. And there are books written about how to do that. We're trying through Valerie's team to do that. I've been thinking recently, I happened to look at Shelley Row's blog last week because she - maybe someone already mentioned that she was in - she and her husband were in Cairo a few weeks ago when the revolution was starting and they were stuck at the airport. She wrote some very moving stories about their experience there. They were in Christchurch, New Zealand during the major earthquake and she wrote again some very compelling, moving stories about her experiences. Moving. But yes. But my point is that I think she has a gift, if you look at her blog, she has a gift at telling stories and I am already signing her up to work on this because I think a lot of what we need to do is take the results we have and the results we're getting, convert them into stories that are compelling, that get people excited beyond just our transportation - our best friends. But I think - I mean, we all need to work on that, we all need to have stories in our heads that we tell and that get retold. So I think we can do that, that just may be something that we tend to forget.

MR. CALABRESE: This may be very futurism - but of a personal nature, if I can equip my roadways with the traffic signal prioritization for public transit, I can save a boatload of money today.

DR. BERTINI: And that's not new.

MR. CALABRESE: But again, there needs to be someone saying this is a great investment because it may cost some money here, but it's going to save money here because it's all coming out of some federal pot somewhere.

MR. BELCHER: Well, one of the things we do - I mean just ITS America does that gets a little bit to that is what we call our Smart Solutions Spotlight Award which we give out about every two or three weeks. You know, we gave the Utah Transit Authority one when they implemented their contactless payment system. I mean, first time in the United States that had occurred, really is unique. I mean, it's not really even occurring, you know, it's just a few times even around the world. Has a chance to kind of revolutionize what's going on in transit. We gave an award and told a story about a project that Rob was involved with before he got to RITA which is the synchronization of a number of traffic signals in Portland, Oregon. It's a great story and I tell it all the time and so maybe you've all heard this, but the thing that was unique about it wasn't necessarily the traffic light synchronization, but was the fact that they partnered with a climate trust, quantified their emission reductions, sold the emission credits and got money to pump back into the transportation system. So that, I mean I think those are the kind of stories and examples that we're all looking for.

MR. KISSINGER: We need to sell those. And you know, on the safety side let's not forget, some in the room may not be aware, there is right now under development the first ever national strategic highway safety plan which is meant to be very comprehensive and it's meant to - it's being done in the context of the first ever bona fide I think sincere towards zero death vision.

DR. BERTINI: And we were at the table. I just want to make that clear, the ITS

program.

MR. KISSINGER: Right and you are at the table. And that documented - even if the document's vision is realized, it's meant to articulate some of these specific connections. Here's how what percentage of that vision ITS could contribute. Here's what the investment would be and here's what the payoff is.

DR. BERTINI: And I think back to Jim's point about public health aspects. I think also for the first time within the USDOT there is a very strong appreciation of the impact of injuries on society in addition to fatalities. That to me is significant.

CHAIR SUSSMAN: Joe, in the context of what you said it's kind of interesting thinking back again to earlier days in ITS. In the earliest stages some of the people shaping the program were characterizing transit as the potential early winner in ITS - this was back in the '90s - on the theory that they could translate their travel information, fleet management, into actual savings and ridership boosts, but it never really happened. Transit was among the slowest to adapt - adopt, I should say, these technologies. And this goes to this broader question of institutional strength. I mean, these are often distressed properties who are in the public spotlight for losing money and in my area every time it snows the MBTA goes into the toilet and so on and so forth. So how do we solve those kinds of issues? That's beyond the scope of this committee, but that kind of question of how deployment could be aided with some institutional reform I think would be - is a very important one.

MR. CALABRESE: I think one of the issues in our industry that we're trying to address, you know, let's say there's a hundred major transit systems in the country and we're all operating like a hundred separate companies around the country versus operating - let's develop

something for the industry that is compatible to the industry in a much more cost-effective way, not just to develop and deploy, but also not be damaged. And we have - as an industry, we have our biggest issues with the more electronics, the bigger the issue. I mean, there's not been - a simple thing is fare collection systems. Ticket vending machines. You know, those are nightmares in the industry. The one in Seattle, they're seven years behind schedule. You know, we're - it's just - because for whatever reason even though there's great potential, the industry isn't that big, there's not a lot of suppliers that want to support the industry because of the size, but yet it's an important industry. It's important in terms of the number of people we move and also in terms of the money we have to provide and support products.

DR. DROBOT: But Joe, I mean isn't the predominant pattern though that almost the introduction for example of fare machines, things of that sort, almost every system reinvents itself, gets its own vendor. You look at the rest of the world and it's totally different.

MR. CALABRESE: Well there are basically two vendors. Neither one of them do a good job. And the biggest issue -

DR. DROBOT: So why don't a lot of us gang together and figure out how to get them straight?

MR. CALABRESE: Well, I do, I haven't paid mine in two years. But the biggest issue in things like one of our issues in the industry which is not going to be solved soon is the whole buy America concept where there's a lot of great technology in Europe in terms of vehicles, in terms of ticket vending machines, in order to that technology that we can't bring over, we can't attract.

DR. DROBOT: You know, I got a walk-through of what's called the Octopus

system in Hong Kong. What a wow compared to what I face here.

MR. BELCHER: Joe, I just wanted to - I think just maybe to shade your comment because I think you were a little harsh on the transit. I mean, transit in fact were among the earliest adopters of ITS. Most transit systems have got ABL systems for example. Fifteen years ago they didn't have that, and that's how they manage their fleets, and as a result of that you're seeing an increasing number of transit systems that are providing real-time traveler information and if they can't you're starting to see an increasingly large number of transit systems that are making that information available to others to provide it. I mean, that's a cultural change that's happening but that - the whole kind of investment in ABL, investment in fleet management, those are all ITS products that have in fact transformed transit.

MR. CALABRESE: I think it might have been slow initially, Joe, but I think in the last five years there's been a real surge.

CHAIR SUSSMAN: Yes.

MR. CALABRESE: And again, one of the issues has been as I mentioned before, we don't have a Ford that wants to invest their own money. I gave you some stories last night as to we had to invest our money to convince a manufacturer to do things that they wouldn't do. They wanted to sell us either widget A or widget B, you know, things that all turned out thankfully positive, but there's - again, because you've got a 3,000 to 4,000 bus market on an annual basis. It's just not -

CHAIR SUSSMAN: Not enough buses. Well, my statements were perhaps not nuanced enough. I was referring to the early days and in fact there has been some progress. At the same time, Joe, you're on this committee because you're one of the more visionary transit operators

in the country as you were telling me last night about your BRT systems and some of the very advanced things you're doing. But there are a lot of quite risk averse managers in transit properties around the country and it's quite understandable why they're risk averse. Every time they put their head above the foxhole line everybody gets, you know, the Boston Globe opens fire. So it's not - it's not surprising, but it is indeed a fact of life we have to deal with.

MS. BRIGGS: You gave me a good entree to this last slide which is -

CHAIR SUSSMAN: The last slide?

MS. BRIGGS: I know, we're close. The - we started a policy research program two years ago, a formal one. I think we have always had a policy research component to all the research programs, but two years ago we said, you know, this is important and we aren't going to be able to solve the institutional challenges up against ITS but we at least need to continue to have a place where there - where we have some focus and attention on them. And so two years ago that policy research component was kind of formalized.

We - communications and stakeholder engagement change over time and they're a continuing challenge, and so we do try to keep up with new ways of communicating. So I just wanted to let you know kind of what we had done in the past and continue to do and some of the new things we're doing. We have always had a professional capacity-building program. That equates to training professionals that we do, you know, we have done classroom courses. For instance, the ITS architecture, when that was rolled out, heavily classroom courses. And we are moving away from that and moving towards instead of us delivering courses we're focusing on delivering content, identifying kind of what are the core needs in the training area and where can we provide materials for people who do training, people both at the professional level and at the

university level now for the first time, and how can we support them in getting ITS education and training out there better.

DR. BERTINI: Valerie, you might - well, I'll just mention that we have a draft strategic plan for the PCB program.

MS. BRIGGS: We do.

DR. BERTINI: Is that still open for comment or is that closed?

MS. BRIGGS: It is not open for comment but it's still up on the website. And if you have comments I'm sure, you know, we'll take them. But yes, we did roll that out at TRB that we have - well, we were doing stakeholder activities all last year and we do have the plan out, available, and it's in draft and it's - but it's, you know, we plan to put the final version up. It's very similar to the draft.

DR. BERTINI: And the number is escaping me, but I know that last year for example in 2010 we touched thousands of professionals one way or the other through peer-to-peer or through PCB.

MS. BRIGGS: Yes.

DR. BERTINI: So that these programs are touching a lot of people.

MS. BRIGGS: We do. We work a lot with our stakeholders on these. So ITS America, we have traditionally worked with them to deliver some sort of coursework. We - our peer-to-peer program is the one where we have had money available for public agencies to go visit other public agencies, and that's been wildly popular as you can imagine, and many people have come to me and said this is why I deployed ITS because I saw what they did in Kansas City or you know, whatever. So that's been a well-received program and of course it has to be managed and we

do manage it to make sure that it's used appropriately and the people who use it do come back and do webinars for the community to learn what they learned. So the next thing is we do have a very active webinar program, have had for a number of years. We have a formal one called T3s that is part of the training program where we do try to organize webinars around certain content. We have professionals from out there who are implementing technology actually host and speak at those webinars. We also do webinars associated with all of our public meetings and anytime, you know, we do kind of periodic updates through webinars of our various research programs when we feel the need. We just recently did a bunch on - we did one on trucking last week and we've recently done one on the AERIS program. So we do try to get information out through webinars that are open to anyone. We have public meetings as I said before that do require travel. And then we have had a number of online resources for many years, the Benefits, Costs and Lessons Learned database that catalog the ITS benefits, costs and lessons learned from those many evaluation programs. We have a deployment tracking database. Every I think three years or something we go out and we survey the industry of public agencies to see where they have deployed ITS. And we make all that information available online. We just did a - the update and so we'll be excited to share that soon. And then we catalog all of the reports that we do through the National Transportation Library so that they are available to the broader public as well as available to our community through our website.

I already talked about the policy research program. We are also doing active stakeholder engagement planning now. We're starting to do more contests starting with a connected vehicle technology challenge that rolled out at TRB. We're starting to use Web 2.0 tools and this is actually a lot more challenging in a government organization than perhaps in your organizations

because there are rules that we have to follow and we, you know, every communications that we have outside of our organization must go through appropriate approval and vetting processes. And so we can't - we have chosen these tools as appropriate for us. We also have limited ability to respond to every comment that might be posted on a blog. So we are very careful about Web 2.0 but we see it as necessary and good.

DR. BERTINI: We're also on Facebook just so you're aware.

MS. BRIGGS: RITA is, yes. And we are trying to do more information push rather than just expecting people to show up at our website periodically through kind of short newsletters that say here's the - there's a new posting to our website, or here's the latest on our programs. And these are just very short kind of email updates when we think we have something new to share. And there is a new RITA resource called transportationresearch.org that is intended to be a - well, it is a collaborative web tool for anyone to join to share research results on any transportation topic. And transportationresearch.org is organized into 13 clusters and one of those clusters is ITS. So the idea with transportationresearch.org is that all of you can get online and share what you're doing if you choose to, or you can follow what others are doing. So it's intended to be a resource for others to post information instead of just us posting what we're doing.

MR. KISSINGER: You're saying dot org.

MS. BRIGGS: I'm sorry, it is dot gov. Yes, it is dot gov, transportationresearch.gov. We have - it's dot gov I'm pretty sure, yes. We're trying to - part of the new professional capacity-building strategic plan is to look into creating an ITS certification program so you could become a certified ITS professional much like you become a PTOE, professional transportation operations engineer. So it would be just a recognition that you've gone

through some level of coursework or training related to ITS and you have certain skills. And so they're looking into what it would take to do that and how to administer it.

CHAIR SUSSMAN: Who would do this? Who would pronounce somebody certified?

MS. BRIGGS: I'm sure it wouldn't be us. We would work with a partner, you know, one of the associations or a group that does that sort of thing.

DR. BERTINI: ITE as an example has several certifications for transportation operations.

MS. BRIGGS: Yes, and others.

CHAIR SUSSMAN: It wouldn't be the feds who are doing it.

MS. BRIGGS: No, no. I mean, but we recognize that it takes resources to put something like that together, and so.

DR. BERTINI: And keep it up.

MS. BRIGGS: Yes. And then my favorite slide, this is our new website that we just rolled out.

CHAIR SUSSMAN: Who's that in the upper right-hand corner?

DR. BERTINI: I have mixed feelings about that.

MS. BRIGGS: We just rolled this out in January and we really did our best to try to make this user-friendly you know as opposed to just focused around our organizational management. So you do -

VICE CHAIR DENARO: I think it was a big improvement.

MS. BRIGGS: Thank you, thank you. So we didn't hire you know expert

marketers, but we really did try to do our best. So we do cover the research that we're currently doing and we also have resources for technology transfer that are intended for people who want to deploy ITS and getting them directly to all the resources that we have available more easily. So this is our new website and we're pretty excited about it.

CHAIR SUSSMAN: Valerie, thank you very much. We got through a lot of material and with a lot of very good questions and a lot of discussion. So when I talked about my TRB speech a month ago Valerie was there and you recall that I talked about committee's view of JPO's role within the ecosystem that is ITS and what we had - what I characterized as our view. And I'm looking to an extended - as Bob Denaro, he and I have discussed this on many occasions, is that JPO should be in a leadership role within the ITS community but in my phrase not oppressively so, not with their boot on your - on somebody's neck. So I'd be interested if you feel you - and I'll turn to Rob and you and anyone else whether you achieved or that you would reasonably characterize as a leadership role and how the committee feels about that as well.

MS. BRIGGS: I think it would be self-serving for me to try to answer that. I'll turn that over to Rob to see what he would say, but I would be interested in you know your experiences with your community. Do you think we're in a leadership role?

DR. BERTINI: I mean I personally also it would be self-serving to talk about this, but I think you know the history of the program, there has been an evolution that perhaps a lot of people including myself until I arrived in the shoes that I'm in right now, that I didn't fully understand because I, like many of you, I think still thought of the USDOT's ITS program as really focused on deployment and you know, technologies that we already know are out there in some cases that just need to be, you know, that are infrastructure-based technologies. So for me I think

the legislative history, the casting of the ITS JPO as a research organization in safety loop which is distinct and different from the previous two pieces of legislation. I wasn't - that had not sunk in to me from my perspective from the outside. So I think given that reality, I mean I think we've done a lot in the last few years to communicate that, to be very clear about what our goals are. I think we've tried to have a sense of humor about it that you know, that we are doing a lot and that we are you know, that we have lots of priorities. And I would say that the program has been strengthened through the incredible competence of Shelley Row and the whole team, every single federal staff member, every single contract staff member. It's an incredibly talented team who work very hard and very collaboratively and very rarely does something get taken off one of their plates. So very often we are adding things to their plates and never once in my experience has any of them said no. Usually it's ah, yes, but you know, so I think from the internal perspective I think those are some facts. I think also the - as Jim was saying, maybe the spirit of cooperation and collaboration I think has also reached a new level which I think is one of the ingredients of leadership. So the fact that we are more open to communicating and collaborating and sharing information, being more transparent, establishing a vision, communicating that vision. So I believe we have a strategic plan, we have a place we want to get to. I think we're on track and I think in the last couple of years our leadership position has gone up. But like Valerie said, we'd like to hear your.

CHAIR SUSSMAN: Let me just turn to Bob because Bob has been talking - he and I have been talking almost from day one about the leadership of the federal folks. Do you - is there something you'd like to throw into the pot?

VICE CHAIR DENARO: Sure, but I'd like to hear what Valerie says first.

CHAIR SUSSMAN: Okay.

MS. BRIGGS: We are professional project managers. We are not the comp techies out there or - we hire those people. And so I would say that the focus of the staff is on executing the research program, working with our stakeholders and you know, you don't see us leading a lot of TRB committees or you know, trying to be in those sorts of leadership roles, but I am very interested in knowing what we can do to advance this industry, and if there are leadership roles that we could or should be taking that help the industry advance more so than leadership in - leadership in broad terms. You know, trying to be the very best top technical person in one field or something like that, so.

CHAIR SUSSMAN: Bob?

VICE CHAIR DENARO: Let me see if I can say this without rambling. This might be difficult, but as I've been - I think this has been a great discussion and very valuable. Yes, the leadership question really came up in our 2008 memo. In fact, I copied it out of there last night. The committee noted the importance of USDOT as a leader in the transportation scene and ITS in particular. That is not to say the USDOT or the ITS JPO needs to dominate the ITS agenda. Rather, they can play an important role as facilitator/coordinator/shaper of the ITS program, working together with the partners in the states and the private sector. So that's what we said back then and I guess what Joe and I are saying is this continues to be an issue for us, okay? And in terms of answering the question of whether I believe you're in a leadership position or not, first of all I'll say the positive part. I think you've made tremendous progress in two years and I really congratulate you for that. I mean, the stuff that you've presented Valerie, the programs and the things that you're doing are all moving in the right direction with what I would call leadership so I think that's great. Now, the bad news. I don't think you're there. And looking back at Don's

comment, I'm not sure you can get there, okay? And I'm going to apply a little bit of a, you know, in the private industry, what we do in business. If you want to get something done, if we want to accelerate ITS, we want to save all these lives and so forth, what you do is you put one person in charge and you say you're the CEO of this thing and you've got to set the goals and spend this much time and either you get it done or we'll find somebody who can. You can't do that here, you know. We can't tell Valerie that within 18 months we need 10 states up and running and doing this. You know, she has no control of that goal and that objective and so that's a difficult thing.

DR. BERTINI: Similar with high-speed rail I might add. I mean, if we want high-speed rail you know there isn't a CEO for high-speed rail.

VICE CHAIR DENARO: Well, and so what has the government done in a lot of instances? You know, we have this concept called the czar of whatever, okay? We can't figure out how to get it done through our normal organizations so we create the czar guy who - and what does the czar guy have? Two things which I think you lack. One is authority, you can't do it without authority, and the second thing is resources and funding. It is not hard for you to get the states to go deploy a whole bunch of stuff, it only takes money. All you have to do is show up with money and say we're going to fund half of what you do and here's what we think that ought to be, and guess what, it's going to happen. So I mean that's the practicality part of it I think. So my conclusion you know coming back to that is that you know barring the fact that we do see a substantial change, and maybe we need to consider that as a committee. We've danced around this funding issue and maybe we need to figure out the words we want to say there and respond that way, but barring you know near-term changes and that, then I go back to what Don was saying. You know, at the end of the day you've got to focus, you've got to - we've got to get something done that's going to contribute,

but that's manageable within 17 people for crying out loud. I mean, when I think about the agenda we're trying to set here and accomplishments, I can't see an organization any fewer than 200 people who could do this. And I mean, with 17 people and you know, you just said it, Rob. We go to each person, we put something else on their plate, you know, we have the danger that we're going to have a lot of really smart and capable people dabbling in too many different things and not really making progress in a few things. And so I don't have an answer, but I'm starting to get a lot more clarity on the problem, let's put it that way.

CHAIR SUSSMAN: Yes, Adam, please.

DR. DROBOT: So I think I would have two things to say. I don't have as long a history as you have with ITS, but I can tell you in the last two years the visibility of the program is higher than I've ever seen it before. The visibility of the program and you know I would say that the team really deserves kudos because it has traction I would say with industry, it has traction with the Secretary, and I think that that is in fact a manifestation of leadership that that has happened. So I mean on that one very, very high grades. In terms of getting from here to there I have a little different view than Robert does and that is this is a research organization, and the success isn't whether they do the deployment, it is whether they cause other people to put up their resources and get traction. And again, I see them on a track to do that and I'll give you sort of a statistic from another agency that's in a similar business and what they call themselves. That is when you look at a place like DARPA as an applied 6-2 research organization their job is to get across the valley of death because most technology dies and never gets deployed. And the way you do that is you engage stakeholders. And I've got to say I've seen, you know, witness the statement from Jim, very good cooperation with stakeholders. I actually think this is going in the right direction. I'll tell you,

when I look at a DARPA program manager, an average one manages \$50 million. Seventeen people times \$50 million. You're in the ballpark, okay? So I don't worry that much about it. What I do worry about is that there is enough for the community and in most research organizations there is something called proposal pressure. In other words, people want to do things, they show up at your doorstep. I think you've got to document that they want to do things because one of the best cases you have to lift your budget, get those resources, is to actually demonstrate you're getting the proposal pressure, it's meaningful things, you have evaluates them, you don't have enough resources to deal with it, okay? And that's how you know that an area actually warrants an investment. And again, I think I'm sort of seeing the proposal pressure sort of in spades at this point. So I think things are, maybe, glass is half full, but I think it's heading in the right direction. And I think all this outreach I think is very positive. Mind you, yes, you do have to focus and show some real things.

BREAK

SUBCOMMITTEE BREAKOUT MEETINGS AND LUNCH

CHAIR SUSSMAN: So let me again thank Valerie for in effect facilitating a very useful discussion. Thanks. So we'll go on break now. Before we do that let me just say a few words about the three subcommittees. I guess fellows we'll all be in this room so we ought to find a corner for each of the three subcommittees so we don't interfere with each other. I need to be near the phone because Ann Flemer who is in fact the chairman of the subcommittee that I'm on is going to be calling in so I'll sort of grab this part of the room and hopefully we can stay out of each other's way. So just to review who should be going to each as I understand this. On technology and communications Peter Sweatman is the chair, Bob Denaro will participate in that and Walt - is he

still among us? - I'm suggesting participate in that along with Rob Bertini. In the case of standards and harmonization Jim Vondale chairs. Adam, I had you in that group. You're actually in both groups, technology communications and standardization and perhaps you might want to be the free safety and float back and forth to a certain extent. Don and Scott and Steve Sill should also go to those - I'm suggesting go to those groups. Scott, I think you're actually on that subcommittee and Don just volunteered to be on it, right Don? The standards harmonization subcommittee. And the final one is program evaluation and strategy. Ann is chairing that. She'll be on the - she'll be on the phone. Joe C. and Joe S., me, are on that as well. Peter Kissinger, I'm hoping you could perhaps join us for that and Valerie, if you could be the federal presence that would be helpful. Does that sound reasonable to everybody? I don't know what happens now in terms of all this recording and record-taking since there are three parallel sessions going on and whether someone's going to come to my door with a subpoena on Monday morning as a FACA rule-breaker.

MR. GLASSCOCK: They're just recording the full committee.

CHAIR SUSSMAN: I'm not going to - I'll stay out of trouble. So if that's okay with everybody let's take a break, it's 10 after 10:00. Perhaps we can restart around 10:30 with those subcommittees. That goes till noon. Lunch is coming in here and then the afternoon session is devoted to report-outs by those subcommittees and I hope to at least to some extent we could start to flesh out some recommendations in each of these areas that we could go forward with.

VICE CHAIR DENARO: Do we have breakout rooms for the other two?

CHAIR SUSSMAN: No, no, no, that's what I said, everybody's in here but hopefully it's a big enough room where we can separate each other. I just need the proximity to the speaker phone. Okay, we stand adjourned and if the chairs of those committees could sort of stand

in a place that will attract your members.

(Whereupon, the foregoing matter went off the record at 10:12 a.m. and went back on the record at 1:05 p.m.)

SUBCOMMITTEE REPORT OUTS/PRESENTATIONS

VICE CHAIR DENARO: My job is to facilitate this report-out of the breakouts and I think it's pretty simple, we just go through them. So Peter, you want to give it a start?\

TECHNOLOGY STRATEGY SUBCOMMITTEE

DR. SWEATMAN: Thanks, Bob. Sure. And I'm sure you might want to add some things too. So we had a small but dedicated group and it was great to have Rob Bertini and Walt Fehr involved as well. So this is the - I think we originally called this subcommittee the technology strategy so I'm not sure whether it's called that or technology and communications, but something like that. So I just want to report out briefly in three areas: what we want to do as a subcommittee, some specific recommendations and then some next steps for our subcommittee. And as I said, Bob also made some notes so he might want to add to it.

So what do we want to do? We want to make sure that our efforts are integrated rather than independent. I think we've had a lot of discussion about the fact that we can't just be doing something like DSRC or V to V or V to I for that matter in isolation. All these efforts need to be integrated with other similar efforts. Our work needs to be agnostic as to specific solutions. So - and I know that the issue with DSRC comes up pretty frequently, but we really need to have frameworks, architectures and so on that aren't dependent on specific technologies or solutions. We want to ensure that the technology is multimodal and we had some opportunity to talk about this

today. And I think our overall conclusion was that the technology really is applicable to all modes. So we don't see a lot of issues, a lot of barriers from the technological point of view to our overall goal in ITS of multimodalism, but we're very conscious that we need to make sure that happens. We - something that's being discussed quite a bit in this committee and in between meetings is this notion of a platform, creating a platform for certain applications. And you know, I think that's been generally considered to be a good role for the government and so on. I think as we discussed it today we felt that we're working towards a platform but we haven't got there yet. That's a goal that's a little bit further out and that I think plays a big part in some of the recommendations that we're going to make.

And I think probably most importantly and probably the biggest thing, the thing we spent the most time talking about was that we need to focus on data, the data that's being - the messages that are being transmitted between mobile sources and also - and receivers and stationary sources and receivers. And there are two key aspects to that. One is data security or we could call it management and control of data and the other one is data brokerage. What is the value chain for that data, for the end result of these messages being transmitted? So we thought they were the two key things that our subcommittee is going to be interested in.

So I guess the other sort of principles that we discussed as far as specific recommendations are concerned, and you know we talked at our meeting in January in Oakland about having a summit, a White House summit involving Aneesh Chopra, and we did discuss that somewhat enthusiastically. So we'd like to recommend that we do have a summit on transportation communications and technology, and the key theme we recommend for that is management and oversight of devices in communication, so-called trust relationships. And Walt in particular was

talking about cryptographic algorithms that are very general, so they're not only for transportation, but they're for many, many other applications and there are many other parts of the federal government that are interested in this type of technology. And the reason we think that this theme of management and oversight is so important to do now is because it really incentivizes the platform. Our goal is to have a useful platform and one that many developers are going to congregate around and we won't have a platform until we can solve this problem of management and oversight of the - in these trust relationships. With that summit we also want to draw in broader sectors, telecommunications, companies such as Microsoft, IBM, Cisco who are already showing a lot of interest in transportation. So the ability for us to have a high-profile summit at the White House with Aneesh Chopra is going to help us to draw those sectors in. And we also would like to involve the insurance sector because many opportunities - and Bob might want to comment on this too - that many opportunities for the insurance sector, for example, if insurance premiums can be related to distance traveled, and not only that but related to the performance of individual drivers. We also through the summit want to expand our reach to the auto industry so that we're addressing all appropriate levels of the auto industry including people like chief financial officers. And we also want to involve outfits such as OnStar, INRIX and so on. And also one of our objectives for this forum will be to - or summit will be to use the DSRC spectrum for the purposes that it's really well-suited to sooner rather than later.

So the - the next steps for the subcommittee. We did - we had a draft charge for our subcommittee and we got unfortunately a couple of the more interesting members of our subcommittee were unable to be involved in the discussion today, and Adam's one and Robin Chase also. So but we did have some written comments from them and we really tried to take those into

account. But we will revise the charge that we had drafted and expand that. We want to add some more members for sectoral coverage and we want to try to relate that to - assuming we're going to go forward with a summit, we want to involve these additional sectors. We'd like to get some membership from those sectors on this subcommittee. We would intend to put together a white paper in preparation for the summit and once we've done that to then engage Aneesh Chopra as the co-chair of the subcommittee and move forward to organize a summit which we would anticipate would take place in the fall. So we would want to do it this calendar year. So I guess in a nutshell there are the notes that I had. Bob, did you want to add to that?

VICE CHAIR DENARO: Yes, I'll add a couple of other points on this. We talked about a strong focus and Walt presented a case for why this whole management and oversight function really - he needed help because - and I think - I'm putting words in your mouth so correct me if I'm wrong, but I think there's two directions of that. One is that to put together the technology that can handle the encryption of authentication, that doesn't need to be reinvented. There are other industries who are doing that well like banking and so forth. So the first thing is to make sure we leverage off what's already been done, not reinvent wheels there. But secondly with the broader participation of other constituents is to hopefully create as much standardization as possible. And one example we talked about is there's going to be a need for this kind of thing with the entire electronic vehicle emergence and it's innovation and things that are going to have to be communicated and so forth. It would be a real travesty to have there be two separate solutions for these two areas. So that's something where we're really looking to this summit with the other stakeholders at the table of being able to converge on a solution potentially. And then a few other things and we're starting to talk about what our recommendations might be. You mentioned a few,

Peter. A couple other notes I had was we discussed the need to find an early use of DSRC and Rob put it so we don't lose it, you know. The true benefits from V to V or V to I are going to take a long time to realize the benefit, and we need a way to persist through the legislative changes that will happen over those years. And I gave the example from my early career in the GPS office where the head of the GPS program took a look at GPS and said this thing doesn't have a prayer of surviving 12 or 15 years or whatever it's going to take to get all the satellites up. There's just - someone along the way is going to kill this thing. So what they did is they went out and they found a program and namely it was the Trident Missile Test Program and convinced them to use this as a tracking system for the ICBMs as they tested them and therefore it got a 1-1 priority and it just sailed through every review it ever got. And in fact they labeled the entire system a weapon delivery system. We had a placard above the door when we walked in to work said the purpose of this program is to drop four bombs in one hole and don't forget it. Who today thinks about GPS as a weapon delivery system, you know? But it worked, you know. Survived through. And it was canceled once by the way, I remember the day, and it got cut in the budget and then of course got brought back on. So anyway, that analogy means we need - and I don't think going to DoD is necessarily the way to go here, but we do need to find some early adopters who will keep this thing alive.

We talked about - Robin had mentioned the M to M internet you know machine-to-machine internet of things talking to each other that we're really part of that, our things happen to move, our cars and vehicles and buses and pedestrians for that matter. So tying into that community probably makes sense. And then in the multimodal, you already mentioned that, but we talked very sensibly, truck, bus, motorcycle, pedestrians, it sounds to me like JPO is going definitely in that direction and we just need - I think maybe we might provide additional emphasis to that in some

recommendations. So, Bob or Walt, did I miss anything?

MR. FEHR: I think you got the gist of it.

DR. BERTINI: I think the one thing Peter didn't say about sort of the IBM, Cisco, Microsoft was the smart city notion.

VICE CHAIR DENARO: Yes, smart city. Let me just emphasize one more time too. You know, again, in terms of our bandwidth and how much time we've got to work on it, it's clear to me that this White House opportunity is huge. It's not because of our visibility, it's because it has the potential for drawing senior people in major organizations be it IBM, be it Ford and you know, wherever the telecom, getting them to the table. And you know, it's maybe a dream, but if we could really influence people at that level who have the ability to go back to their companies and make change, you know, really implement change and get on board, if that should happen that would be a major, major accomplishment and essential element of our success moving forward. So I think for this subcommittee to put a lot of focus on getting that summit meeting right is going to be very important.

CHAIR SUSSMAN: You made a good point. Absolutely. We had talked about possibly having Chopra at this meeting but what actually happened?

DR. BERTINI: To be honest I pitched it to Peter and he - he feels that we have a limited number of chances during a year to ask Aneesh for something and he was recently at the Volpe Center. I think you were there, Joe, for the fortieth anniversary. And we invited him to assign some staff to participate in this meeting. I'm going to be meeting with him tomorrow on the wireless broadband topic and so I'm going to talk to him and his staff about this, about getting probably someone on his staff to participate in the next subcommittee meeting and kind of tee up a

straw proposal that this committee approves of for such a summit. And I think there - we were discussing in the subcommittee conversation that there was a - there were two similar summits -

COURT REPORTER: I'm sorry.

DR. BERTINI: There were two similar summits, one related to healthcare and one related to emergency responders and broadband, and I'll get the agendas for those and we can use those as a template. Is it still buzzing?

COURT REPORTER: No.

DR. SWEATMAN: So Joe, I guess one question we kind of had was we want to add some more members to our subcommittee. Is there a process that we need to follow to do that?

CHAIR SUSSMAN: As it's been explained to me the members of the subcommittee don't have to be members of the parent committee. So unless I misunderstand it's something you can pretty well do unilaterally.

MR. GLASSCOCK: Yes, as far as I know. But I guess for the - I think the question from the subcommittee was to the overall committee to at least discuss for a bit the process for that. We talked about different models where you could bring in experts for, you know, for meetings or for presentations, by phone, without officially making them members, just to get to know them a bit and then probably bring membership nominations to the overall committee.

CHAIR SUSSMAN: So let me be sure I track much of what was said. The only specific recommendation I heard or something that could be translated into a piece of advice was to do this White House summit.

VICE CHAIR DENARO: Well, there's several items.

CHAIR SUSSMAN: All right, so help me out.

VICE CHAIR DENARO: We'll flesh that out. We'll flesh that out and come back with it.

CHAIR SUSSMAN: Oh, okay.

VICE CHAIR DENARO: I mean, the need to find an early use of this is something, and somebody else.

DR. BERTINI: Bringing other industries or other -

VICE CHAIR DENARO: Bringing other industries in.

DR. BERTINI: Specifically the electronic vehicle.

VICE CHAIR DENARO: Integrating with other systems. There are several.

CHAIR SUSSMAN: Okay.

VICE CHAIR DENARO: There's three to five in there.

MR. BELCHER: Peter, I'm happy to help. I've got relationships I think with most of the groups that you want so I can give you at least some suggestions.

DR. SWEATMAN: Thanks.

VICE CHAIR DENARO: My opinion is that what we need to do as a subcommittee is decide where we need help, where we want help, what particular topics do we think we need some extra help, and then between the committee members and with your help, Scott, identify some people. And I really like the model Rob mentioned just a minute ago of - as opposed to making people permanent members of a subcommittee and have to come to all these meetings where I don't really have so much bandwidth to do this kind of stuff. And so I would think if we give a very prescriptive, here's the kind of information we want, send this person a list of four or five questions, have him call in and have a call-in meeting or whatever and try to flesh it out that way, see if that

will work. I mean, we've just got to keep this tractable so that we have time to manage it.

CHAIR SUSSMAN: So I'm looking at the draft of what Valerie put together as a straw man for this. So -

MS. BRIGGS: Chris actually put it together.

CHAIR SUSSMAN: Oh he did that too?

MS. BRIGGS: He did, yes.

CHAIR SUSSMAN: Okay. Technology strategy subcommittee will explore how the connected vehicle communications platform could be utilized for the various purposes of ITS, recommendations to maximize the effectiveness of the V to V and V to I communications platforms, advice about future program research. So have we hit those points?

VICE CHAIR DENARO: There are elements in there, but as Peter mentioned I think what we want to do is we want to re-draft that now extensively and get consensus among the members of our committee - subcommittee. So we'll come back with a re-drafting. And even the version that we put together initially needs a lot of rework so we got some really suggestions from both Robin and Adam. And then our discussions that we had yesterday, today, you know, there's just a lot more to think about there.

DR. SWEATMAN: I think a big part of that is we've got a little way to go before we have a platform. You know, this kind of talks like we have a platform. There will be some changes to it.

CHAIR SUSSMAN: So is that an opinion? I'm looking for something concrete. Is that an opinion that we could advance to JPO saying you're making progress, you don't have a platform, you ought to get one?

DR. SWEATMAN: Yes.

CHAIR SUSSMAN: People are comfortable with saying that?

VICE CHAIR DENARO: Yes, I mean we're going to have to flesh that out, Joe.

We just -

DR. DROBOT: I'm not completely.

CHAIR SUSSMAN: You're not sure.

DR. DROBOT: I'm not quite sure how you just get one.

CHAIR SUSSMAN: Well I'm not either, but you got one in your career.

DR. DROBOT: Several.

CHAIR SUSSMAN: I presume if you don't have one you make one, but.

DR. DROBOT: Well, that's the point.

CHAIR SUSSMAN: So your concern as you have been on other topics would be a matter of resources that you would have to devote to creating such platforms is what I'm hearing.

DR. SWEATMAN: I think what we spent a lot of time discussing this morning was the fact that this whole issue of developing trust relationships between these communicating devices is an absolutely key issue to creating a platform. So that's why we wanted to focus on that theme for the summit.

VICE CHAIR DENARO: And engaging these other communities and constituents, you know, that will help us flesh out what that platform needs to look like.

CHAIR SUSSMAN: I had a question on the DSRC idea that we ought to find a quote unquote as I heard you say "and early use for DSRC." So, don't we have any number of examples of early uses of DSRC? Isn't that how we do automatic toll collection, right? So what do

we need an early use of? We've been using it all over the place for eight years or however many years. Can someone help me with early use of DSRC?

DR. SWEATMAN: I think we were talking about a more - something that's having a bigger impact particularly to do with safety. I mean, we've identified safety as our key focus and so how is DSRC going to make an impact on safety.

CHAIR SUSSMAN: I'm sorry, who identified safety as our main focus?

DR. SWEATMAN: Well, I think we spent a lot of time yesterday talking about -

CHAIR SUSSMAN: Is that what this subcommittee wants to say, that safety is the main focus of the ITS program? Is that what you want to say?

DR. BERTINI: Well it is our - as far as DOT.

CHAIR SUSSMAN: I'm just hoping to find out what we want to say.

VICE CHAIR DENARO: That sounds more like policy of the third subcommittee.

CHAIR SUSSMAN: Yes, well, we'll get to them.

VICE CHAIR DENARO: As opposed to technology.

MS. BRIGGS: Well another thing related to DSRC and tolling is that most of the toll systems out there don't use 5.9gh DSRC so I think you're talking about two different things. If you're talking about finding uses of the 5.9 spectrum that's -

CHAIR SUSSMAN: It's a spectrum.

MS. BRIGGS: Yes, it's different than what the toll agencies use today.

CHAIR SUSSMAN: Yes, I guess there's no question of course that safety is of vital importance. I'd be a little nervous if we came out as saying safety is all that matters because I think there are some other things that matter. I'm not going to argue weighing which one is more or less

important, but there are other outcomes of ITS that we ought to keep in mind.

DR. SWEATMAN: Well, I think that's a dilemma we have. On the one hand to have focus, clear focus we've put safety front and center, particularly for V to V and V to I, but the appeal and I guess the key selling points of ITS are much broader. You know, it doesn't just address safety, it addresses lots of other good things as well. So that's a dilemma as to how to deal with that, there's no doubt about it. I think we talked about that yesterday. We talked around that kind of issue yesterday. So I don't think this subcommittee is making any grand statements that safety is all we're interested in, but at least as far as DSRC is concerned I don't think we'd say we've utilized DSRC effectively if we haven't done anything for safety. So I guess that's the way I'd put it.

CHAIR SUSSMAN: Okay, that's clear. Good.

VICE CHAIR DENARO: I guess another way to summarize where we are as a subcommittee I would say is that we want to go back and reformulate our charge so we're all on the same page with what we're trying to do and that'll clarify some of this ambiguity of what our responsibility is as the technology subcommittee, so that's the first thing. Second thing is we will come up with a list of four to five or however many recommendations that we'll bring back to the overall committee for debate and consideration. And thirdly, which is maybe the number one, is to really emphasize and focus on this White House summit to make that a meaningful event that moves this entire program forward. So I think those are the three things that we - are unfinished business that we need to come back.

CHAIR SUSSMAN: So is it fair - when we talked about this in Oakland, the sense around the table was this would be a very good thing to do but we're nowhere near ready. So I'm hearing a much more positive perspective coming up here that we are ready and we ought to start

working toward making it happen. We get exactly one bite at that apple, that's almost certain, so is the sense that we are now ready to begin rolling that out?

VICE CHAIR DENARO: Well, I wouldn't say we're ready for the meeting.

DR. BERTINI: Ready to shape a white paper or at least an outline of a straw.

VICE CHAIR DENARO: We're firmly committed to doing that.

DR. DROBOT: I'd say there's a precursors before you're ready.

VICE CHAIR DENARO: See what it looks like before we get there.

CHAIR SUSSMAN: That's important because eight weeks ago in Oakland nobody felt we were ready.

DR. DROBOT: I don't think anything has changed.

CHAIR SUSSMAN: Okay. Okay good, this is very helpful.

DR. SWEATMAN: But I think it's the case that we have an opportunity this year with Aneesh Chopra, we'd like to take that opportunity and give it our best shot basically.

CHAIR SUSSMAN: Absolutely.

DR. SWEATMAN: So we know we've got a lot of work to do.

VICE CHAIR DENARO: We're not ready in terms of having to define what the meeting is, its outcomes, desired outcomes, and so forth. My personal opinion is that I'm a hundred percent committed to saying that it's something we're going to do and we'll figure it out. We'll get there.

CHAIR SUSSMAN: Good, excellent. I seem to be playing two roles here, moderator and -

VICE CHAIR DENARO: Oh, that's right. Okay. All right. So we have to go to

second subcommittee. How about standards and harmonization.

STANDARDS AND HARMONIZATION SUBCOMMITTEE

MR. VONDALE: I think Scott's going to give the product for us, or at least start it out.

MR. BELCHER: Okay. This is going to be quick. We actually have a fair amount of slides but we're going to slide through it quickly. The people who are on the committee from the program advisory are the folks you see there. We've already begun to recruit advisors, ex officio advisors, whatever the appropriate word is, we're recruiting them. And you can see Dick Schnacke who's the technical advisory committee chair for TC-204, Steve Sill who's the resident expert, Bernd Gottselig - did I say it right?

MR. VONDALE: Gottselig.

MR. BELCHER: Works with Jim in Europe and has a key role there.

MR. VONDALE: It's actually Bernd, B-E-R-N-D.

MR. BELCHER: N-D, okay. So we've done very little so far. We shared some presentations. We had a conference call where Dick Schnacke explained ISO TC-204 and we're going to touch on that slightly for background for the group. There was an initial call of OICA that brought the different standards-setting bodies together that Jim participated and Steve both participated in that made clear that the regional bodies all want harmonization in their own way. Is that fair?

VICE CHAIR DENARO: What's OICA?

MR. VONDALE: OICA is the association of associations, the Alliance and other automobile associations globally belong to a global association called OICA. It's a good

representative of the automotive industry because that's what we're looking for, global auto representation, that OICA. And Bernd works for me and he's the chair of the technical committee of OICA and he also is - participates regularly at the WP-29 meetings. OICA is a participant in WP-29 so it's an organization that's very familiar with harmonization.

MR. BELCHER: Steve, you want to touch on this slide?

MR. SILL: Sure. Yes. Sorry, but thanks for getting my attention. This is just kind of a one-slide briefing I actually did for another purpose showing what USDOT is doing. We do indeed intend to publish shortly an ITS standards strategic plan that will cover a lot more detail about what we plan to do going forward. We put money on the table to facilitate standards development. We do not pay everyone involved historically except in the rarest of circumstances. We generally provide the funds to facilitate the management and maybe the technical editor of a working group that's primarily composed of volunteers to develop a standard via the processes of a given standards development organization. We also don't publish our own standards, although there are certain conditions under which we could if we made the case it was necessary.

Why do we care about harmonization? A couple of really simple reasons. If you use the same hardware and the same software in your vehicle for multiple markets it will lower the cost of building the vehicle, it will also increase the breadth of your supply base thus lowering the cost of the components to go into it, and ultimately if we are talking about safety and saving a substantial number of lives, the sooner you do that the better, and even if you only accelerate things by a few weeks or a few months you're making a pretty substantial impact. Further, there's not a whole lot - there's more work to be done in both technology and applications development than there are people to do it and rather than us and someone else working on applications to do just

about the same thing it would be much better if we avoided such duplication and tried to be efficient about how we all go forward since many of our interests and goals are very similar with those outside the U.S.

What are the next things on our horizon? We expect an architecture later this year and from that architecture we expect to extract and prioritize those interfaces where standardization is important, where federal role is appropriate in standardization and then decide how we're going to go forward in getting those standards developed to the extent they need to be developed or seeking to adapt something else that's out there to the extent it's available. We are still thinking about how to efficiently engage the community beyond what's already being done in the systems engineering program in helping us manage that prioritization process in such a way that it actually gets done what we need it to get done and fully reflects everyone's interests. We will continue the DSRC standards development and -

CHAIR SUSSMAN: Could you go back just a second? So when you say continue DSRC standards development, you mean the 5.9 DSRC?

MR. SILL: For our purposes, yes. However, the standards we are developing are not necessarily only usable for that purpose. IEEE 802 and 1609 series and the SAE-2735 message said these are fundamental standards for communication across that wireless lane. The message set, however, could be used for any - almost any - is relatively independent. Harmonization essentially from our perspective is we will advocate it and support it when it's in the public interest to do so. Next slide, please.

We do have an EU-US agreement on standards and we are proceeding forward with this. I'm not going to read the whole thing, but if you notice the things in red that were underlined,

why are we doing it? Support and accelerate deployment of cooperative systems, global interoperability, avoid redundant standards and the last item is that we do welcome the participation of others. And USDOT also now has a high level agreement with Japan that does cover standards but we do not yet have a detailed level agreement like this one with the Japanese.

VICE CHAIR DENARO: Can I ask the proverbial stupid question? What's the difference between harmonization and standardization? Or was it harmonization of standards?

MR. SILL: To make them sufficiently similar. And you can - there are many - there's actually - I was looking at an email thread earlier today about folks arguing exactly what that definition should be for our purposes. To make them sufficiently similar or identical for it to be beneficial. If you - let me offer an example. If your communication standards, say the three I just mentioned, and some other set of standards that you might use in the European Union are sufficiently similar for you to purchase the exact same hardware then you would consider those standards to be harmonized. They may not be identical, but they're sufficiently common to allow you to benefit substantially.

VICE CHAIR DENARO: But they're two standards dealing with the same subject?

MR. SILL: Conceivably. Now, the ideal case of course is where you simply agree upon a single standard, but in many cases we don't see that happening. In some cases there are legal reasons that preclude it. If you look at the European Union privacy protections in general and the specific laws of many of the member states and compare those with the United States you will see that some applications will just never be able to be identical because some of the information that we might preclude you from transmitting in Europe you might be required to transmit and the converse. So you would seek to harmonize as best you could, but you'd never get to an identical.

MR. VONDALE: I look at it very simply and say if Ford builds a vehicle in the United States and if it connects to vehicles, can talk to vehicles in the United States I'd like to be able to take that vehicle over to Europe or over to Asia-Pacific and have it be able to talk to vehicles without making significant changes.

DR. DROBOT: So if you're at 5.9 and somebody's at 5.2 they want them to migrate to the same spot.

MR. SILL: But even if you're close, Europeans are close. If you get there, you turn the car on and GPS locates itself, it's saying okay, this is the channel allocation, the spectra are so close together that the physical antennas are identical and I'm going to behave as I am in Germany or as I am in Canada or wherever it might be. Ideally.

MR. BELCHER: We can see now that we've added Steve to our committee and thank you Rob for thinking of that. We appreciate it. And Steve will continue to be our technical resource because I think the rest of us are a little bit higher level.

CHAIR SUSSMAN: I'm trying to understand which is the subset and which is the super-set. So if someone - is the high-level definition harmonization and the lower level is standards, or is standards the high-level organization and harmonization exists at the lower level? I think it's the latter.

DR. DROBOT: Harmonization usually involves a much higher level of players. Almost always.

MR. SILL: My gut reaction was to give an engineer's answer and say it depends, but.

MR. KISSINGER: If we're going to set standards - set harmony. So the idea is you

want to harmonize the standards with what the organizations are saying. And if it could be standardized then that would be perfect.

MR. SILL: Again, the ideal case is you really need to come to a single standard. I mean, the most fundamental lack of harmonization in highway transport we have is that there are several countries that have chosen to drive on the wrong side of the road and that is a fundamental standardization issue that the opportunity has been missed. I suspect a lot of money would have been saved if someone had gotten that right the first time.

DR. SWEATMAN: Which side are you talking about?

MR. SILL: Notice how I chose not to answer that part of the question, Peter.

MR. BELCHER: Let me proceed. As I mentioned earlier, we only feel like we've just begun. We've had a fairly in-depth briefing on ISO TC-204 which is just one standard-setting body. There are other standard-setting bodies which different parts of this community and this ecosystem engage in. APTA produces standards for transit, there are commercial vehicles standards. The whole area of connected vehicle standards is not really part of TC-204. I'm going to just touch on a couple of background pieces on TC-204 and some observations that have come out of that group because those observations are valid more broadly, and then I'll leave it with a couple of observations that we have for the committee already as we go forward.

So ISO is kind of the largest international standard-setting body and you can see there are an awful lot of people who participate in it and it's where most of the standard-setting organizations funnel up through to create international standards. The United States participates in ISO through ANSI which is the American national standard-setting body. It sets up a U.S. TAG, Technical Advisory Group, that's chaired by Dick Schnacke for TC-204 from TransCore. He works

very closely with Steve and TC-204 which is the ITS - the committee that deals with ITS standards or the majority of ITS standards is also chaired by an American, Mike Noblett from IBM.

So again, TC-204 deals with most of the areas that touch on ITS standards multimodally and the one excluded place is in-vehicle transportation information control systems which is in another ISO group, TC-22. This is another that we're going to explore further. It's an international standard-setting body so you have participating members which are countries and they each have a vote. And the key thing to take away from this at least for me because I think of things in political terms is if you count the number of the 25 participating members, 12 or 13 of them are from Europe. TC-204 liaises with all of the relevant other standard-setting bodies. CEN which is the European standard body, ETSI, also a European standard-setting body and APEC. And then also the other important groups like SAE, IEEE that are setting automobile standards kind of funnel up through it and they liaise with.

So just to give you a scope of TC-204 here are the working groups. And you can see that they are - it is pretty broad. It's, you know, fee collection, architecture, commercial vehicles, public transport. And working group 15, working group 18, are those kind of the two most active right now, Steve?

MR. SILL: Well, for - we pay attention to all of them. Our primary interest is in working group 16 and working group 18. The working group 18 is trying to be the entity that's overseeing the cooperation between working group 16 and non-ISO organizations such as CEN and they're trying to be the overall cooperative systems working group, with the specific - the detailed standards being developed in 16.

VICE CHAIR DENARO: I saw some numbers missing in there with all those

subgroups and working groups.

MR. BELCHER: Yes, that are not active anymore. No longer active, yes. Steve went through this from the DOT perspective. I think if you step back from a private sector's perspective standards are important because they allow, as Jim said, him to produce products that work not only in the United States but in Europe and not have to produce differentiated products. It allows you to compete more broadly globally, drive down prices, create access to different markets. And hopefully the more people engaged, the more you can save. It's important for connected vehicles for a number of reasons and again, really from a competitive to avoid redundant standards to get to a common look and feel and to allow for consistent future development.

So this is all kind of background because I think what's at stake here is from a historical perspective standards are a differentiating factor, standards are a competitive factor between regions of the country. And we're now in a space where we want to talk about harmonization and harmonization is great, it just depends what you're harmonizing on and what you're harmonizing to. And so saying we want to harmonize, we have a lot of history that we've got to undo I think is probably the fairest way to see it. And we can talk about it a little bit. These observations that I'm going to walk through really quickly are Dick Schnacke's observations, U.S. TAG chair to TC-204 in working in ISO. So these are specific to ISO but generally there may be some value in some of the other areas. ITS is important and it's becoming increasingly important. We've seen that you know, we talked about that earlier. I think everybody sees the benefits of harmonization but you do have groups that want to control it to their end and to their competitiveness end, partly because they want to position their industry, partly because it's pride, partly because they're investing the resources. There are lots of reasons for it.

VICE CHAIR DENARO: So that's to say they still want a standard but they just want to dictate what it is, is that right?

MR. BELCHER: They want their standard, yes.

MR. VONDALE: They're all for harmonization as long as everybody harmonizes to their standard.

MR. BELCHER: As Steve mentioned there have been some MOUs that have been established to lead to greater harmonization. I mean, RITA - I mean, everybody is talking a very - a good game, but Dick's analysis, and these are the major regional standard-setting groups, CEN which is Europe seems to be willing to cooperate and work well. Steve, is that fair? They're generally cooperative?

MR. SILL: They are more cooperative than some.

MR. BELCHER: Okay, and they're more cooperative than ETSI. ETSI is a European group that really does want to continue to use standards as a differentiator.

VICE CHAIR DENARO: What's the difference between CEN and ETSI?

MR. BELCHER: Steve?

MR. SILL: These are both independent European standardization organizations. In the EC there was a mandate issued to develop the standards required - I'm trying to get the exact terminology - the minimum standards required to deploy cooperative systems, which is their V to V and V to I terminology. They invited the three European standardization organizations to come do this and of course get paid to do so. Of the three, Cenelec chose not to participate, CEN and ETSI did. CEN is Centre de - it's a French name. It's the European standardization organization to paraphrase and translate. They operate mostly like a traditional SDO. ETSI, European

Telecommunications Standardization Institute, their primary claim to fame is they're the home to GSM and they operate under their own set of rules which among other things give members votes based on the size of their dues contribution, so it's one dollar, one vote, and the size of your contribution is dependent upon a proportion of the company's revenue from telecom or in the case of a member state the size of the GDP. Needless to say we're not pursuing a membership because regardless of the trend it would make our membership fee the largest there. Further, if a standard they have developed is intended to be mandated across the European Union and go through the EM process, even if you pay your membership dues unless you're a member state you don't get to vote on it. So they - what they have shown is they can develop standards more quickly than others, but their process is not terribly open or inclusive. They've also shown themselves to be quite good at - they're also quite good at developing test specifications and executing testing for you.

MR. BELCHER: Thanks. The other thing that's kind of changed recently is the European Union has passed a mandate called M453 which is essentially driving ITS standards within the next 3-year period of which a year has already passed. And so at least the observation from Dick is that what we're hearing now is a real push to expedite the - to expedite the standard-setting process that has become maybe an excuse or a crutch not to cooperate or collaborate in the way that ISO typically works. Is that fair, Steve?

MR. SILL: There are parties who are using the schedule requirement as a basis to argue against harmonization, saying let us publish our standards, we'll harmonize in the next version. There is at least one group of engineers who've actually harmonized something which is the PSID allocation and they did so in a collaborative way between ETSI and IEEE and the lead of that group will say you can't afford not to harmonize because all the additional expertise that came

to the table made it go faster and cheaper than they originally thought it was. But those above him who seem to be more interested in posturing and positioning their standards development organization conveniently seemed to have their ears covered when he was speaking. So the mandate is being used to - I think many people believe the mandate is being used to justify behaviors intended to get what folks want.

MR. BELCHER: So again, this is Dick's slide. I think there's a lot of useful topics here, but you know, what happens in the European Union is that they tend to do all their dirty work and their negotiations behind the screen and come in a unified fashion to the table because of how important this is. And the government puts a fair amount of money and resources and support into this, much more than the JPO has the ability and the authority to do. And being typically American we don't necessarily collaborate the way that we ought to going into these things. So I think from Dick's perspective it would be useful to have American positions, even though I know the JPO position is that they're not going to set the standards or take positions, it would be useful to have a place to come to consensus, to know what's important, that we can't give on, to know what we can give on, to know what we can trade to accomplish things rather than coming into the meeting and trying to have it happen in real time and having our own members negotiating against each other when we're also negotiating against a unified front from other regions.

VICE CHAIR DENARO: So I'm hearing recommendations being formulated there?

MR. BELCHER: There's recommendations in the next slide.

CHAIR SUSSMAN: If you could go back to the one. Now go back two. Who's the "we" in we collectively need to address this quickly?

MR. BELCHER: That's - I think that that's more broadly the U.S. TAG, the U.S.

government, the stakeholders from the United States need to address this problem. Again, this is a slide I've taken from another presentation.

CHAIR SUSSMAN: I got it, thank you.

MR. BELCHER: So, here's what our group - and again, we only started - we feel like we have a lot more to go and we feel like we're a little bit premature in starting to frame things, but I know if we didn't say something we would get our hands slapped by Joe and so we wanted to say something. As I said before, right now it doesn't appear that there's a U.S. champion for the ability to generate U.S. positions. In other standard-setting areas, and I'm familiar with some, I know Jim's familiar with some, Adam's familiar with some, there is typically a very high-level senior USDOT or U.S. official who is often the representative, an ambassador. In ICAO you have an ambassador to ICAO, in the telecommunications arena it's somebody from State or from Commerce, and this is not an area where that seems to have appeared or happen, and as a result of that in many areas it's difficult to have U.S. positions, especially when we're facing other regional positions. I think we all agree that part of this is having a place where you get parties that care together to kind of - to facilitate harmonization. I mean, there is - even at the international level there is lots of talk about it, but there's not a place for it to happen. Jim and Steve participated in a call earlier this week and he mentioned OICA, and OICA may be a place at least on the vehicles side, but those places don't really seem to exist and we need to find better places for that.

MR. SILL: It's not obvious OICA is - facilitator.

MR. VONDALE: Just to give you a concrete example. Harmonization of safety standards occurs in a couple of places. There's a 1958 agreement, a treaty where European countries and now other countries have joined. It's actually established under the United Nations a

forum to harmonize. There's a '98 agreement that has now allowed the United States to work globally with other countries in Geneva under the auspices of the United Nations to do that. We don't have the time to - 10 years to formulate the '98 agreement, get it passed and so on, we don't have time to do that, but that's a, you know, that's a set forum. So we don't have a natural forum to do this so we have to create one.

MR. BELCHER: The third thing that we saw is a need to identify the top issues for harmonization and that may come out of the platform. We expect many of those will - agreement on that, I think it will be obvious, but it was interesting in our conversation, Adam asked Jim, so what are your top 10 issues that you think we need to be harmonized on and Jim said well I can tell you some of them, but we're working on it. So that's kind of - that's an important issue. And then the other thing that kind of came - well, so if you got those, what are the implications if we don't harmonize on them? And understanding that helps USDOT help figure out what's important and what's not important. The other thing that we found in our discussions is that there are lots and lots of layers of folks that are engaged on these different issues, and you know, you heard Valerie give you her laundry list of groups that they interact with. Well, it's a similar laundry list and often different laundry lists on different topics, and Steve's a one-man shop and he can't liaise with - you know, so again, this is a priority-setting exercise. When you figure out what's the most important, what you can give on, then who do you need to liaise with and how do you do that. And again, Adam - I mean, we all know Adam's role in this committee now. Adam said well, have you been working with this group, have you been working with this group, what about this and we all looked and do you know this person. Well, you know, and so. So but going through these things methodically I think would be really very beneficial.

And then again, I think a common theme that we've heard is this is really serious. I mean, this is serious to our economic position in the world, our ability to compete, our ability to produce product and our committee based on our own collective unique experiences wonder if we've got enough resources and attention allocated to this. Don't know, but we're concerned about that from our other experiences. So what we're going to do going forward, we need to pay some particular attention to the connected vehicle, the vehicle standard-setting space because that was not really where we started. We need to pay particular attention to some of the other modes and how that facilitates and whether that - whether that's within our scope or not and I don't know. We too need to define our scope. So that's kind of where we are.

CHAIR SUSSMAN: At first I wasn't aware you were so sensitive to me slapping your wrist. You can take it, I'm sure.

MR. BELCHER: But Adam, I don't know. Jim? Steve?

CHAIR SUSSMAN: So I'm hearing that most of the issues as I interpreted these presentations are international harmonization issues as opposed to standardization within the U.S. market. Is that correct?

MR. VONDALE: Harmonization of international standards.

CHAIR SUSSMAN: So we're just fine in the U.S.? We're all agreed on all the standards?

MR. VONDALE: No, we don't have all the standards agreed to yet here in the U.S., but we're working on our set of standards, they're working on their set of standards in Europe, and they're working on a set of standards in Asia-Pacific. And if everybody will end up most likely with regional standardization. So U.S. will be largely standardized, Europe will be largely standardized

and so will Asia and then none of the vehicles will be able to work outside of their own region.

CHAIR SUSSMAN: But even within those sectors standardization is incomplete in Europe and Asia-Pacific and the U.S.

MR. VONDALE: Yes, it's still being worked - many of these standards are still very much under development. That's why we need to work now because the farther this goes the more those are going to get set in the given region.

MR. SILL: In the United States for those things which require low latency, very low latency communications, the DSRC car safety things, there are not any competing approaches to standardization. So I don't think we can yet say that everyone's absolutely in agreement, we're doing everything exactly right, but as of now there's only VHS, there's nobody advocating Beta. Further, the use of that spectrum, the FCC order permitting that spectrum calls out certain standards and so long as we act to assure that what is called out in that order is accurate and up-to-date we can enforce it, at least in that spectrum.

MR. VONDALE: And not all of this is malicious. Some of it is based on the fact that there are different let's say priorities in different regions. We can - I'll use the word "priority" in the U.S. is more directed towards safety, whereas the priorities in some of the other regions are more towards mobility. And we saw on the screen yesterday that in order to have a priority for safety and to do it appropriately and robustly you need a dedicated channel devoted to the safety spectrum, and you need - you can't be having your system going off and checking sports scores and the weather while it's also waiting to receive critical safety messages, whereas in other countries they're off checking the weather and doing other types of things while they're - because it's more mobility and it's not safety-critical. And so some of these things, it's partly because there may be a

different focus and a different need, but it's important ultimately we think to have when it's all said and done, especially if we're going to benefit from some of the things they're doing in other regions and they're going to benefit from us to have a spectrum and standards that are compatible.

DR. DROBOT: Joe, let me step back a little bit because you have communications at the physical layer and that is I'm going to use a particular piece of spectrum, it's dedicated to something, I've got to make sure that it is. That's one extreme. The second which I would say concerns me more and more is that when you look at a car and you look at the functions in it or any other vehicle you have a vocabulary of what it is that you're communicating with. So let me give you an example, an identity of the car. Today you look at a VIN number or something of that sort. You have to start thinking about the whole lexicon of what ends up being in the inventories of all the databases when you write your software. Talk to the same thing. If you don't, stuff doesn't work. It'll work in one market but not in others essentially. And the cost associated with that, and just because you have the wrong language are tremendous essentially. Your testing - I mean everything sort of falls apart if you don't do that.

CHAIR SUSSMAN: So is there something specific we would like to suggest to JPO that they do that they're not doing?

DR. DROBOT: Well, I mean I have a feeling that they really need to do one little piece of homework if I can suggest it, and that is really come to a thorough understanding of how the U.S. faces the rest of the world, who's got the authority for it and where you find a champion and the appropriate institutions you have to deal with. Because anything that goes abroad either the trade representative or State or somebody else like that eventually touches the process. If you don't have their attention and you don't have them on your side it's hard to elevate it to the right levels

actually. And you know, while deployment may be some years off, this is really where you sort of set the foundations for this rollout. I mean, I think it's actually pretty important.

CHAIR SUSSMAN: Well, I don't think anyone's questioning that, I'm just trying to get my arms around what we ought to -

DR. DROBOT: But it's more than a - my feeling again, this is more than a one-person activity.

DR. BERTINI: Steve is a one-man shop, but he has some visual support. We're trying to find a way to get more -

DR. DROBOT: But you know, it does take time, it does take budget and it does take staff to do this.

DR. BERTINI: And I'd say the memorandum of cooperation that we have with the three other governments that's under the umbrella of the U.S. government, Department of State is involved with those. I mean, we are not exchanging things and those aren't specifically saying that we're taking a particular position on standards, but standards with the European MOC is really the first order of business and the data dictionary that you were alluding to was and is the first task that the teams have been working on under that umbrella.

DR. DROBOT: It seems to me that in some sense as you progress with the overall architecture it becomes obvious as to what standard bodies you have to touch. And you know, it does start off with that front end, what do I do on the communications stuff, but it also - I mean, as you'll discover through the back end of everything, it also has a lot that goes along with it. And it does because no system operates perfectly and you have to start thinking about how do I recover, you know, if I have a problem who then do I deal with. There's a lot of operational experience that

goes into this. We don't have a system here operating, it's not too early to start thinking about how all of that will -

DR. BERTINI: It might be worth mentioning -

DR. DROBOT: And owning that.

DR. BERTINI: It might be worth mentioning that, as Steve mentioned, the strategic plans for the standards program is going to be released very, very soon. The cooperation with the Europeans, again the landscape is really broad, but if you look at specifically what we're doing we've chosen three specific applications around which to focus on harmonizing standards, two safety applications and one environmental application that we're working on anyway, so we're going to be working through specific applications around which to harmonize standards from which we believe there are - there will be lessons learned that will let's say spread out to other applications. So rather than being theoretical and hypothetical, philosophical for the next 10 years we've chosen to focus on some very specific things. And you know, we can't do it alone as everyone is agreeing and I think I've talked with Jim about the fact that, you know, we've tried to make it clear that we are committed to this approach but we can't do it all and we need other stakeholders, other partners to also be at the table.

MR. VONDALE: But as we said, a key enabler is the identification. We know we can't nor do we need to harmonize everything. A key enabler is in the first instance identifying and prioritizing those requirements, those standards that are essential for harmonization in order to have a speedy and effective and cost-effective implementation.

MR. BELCHER: I think it's also important you know to recognize the renewed importance that USDOT has placed on standards. This is the activity, the resources, the

coordination within USDOT is - has changed in the last two years and it has been elevated. I mean, there's an interagency - high-level interagency group that coordinates on standards, is that right, Rob?

DR. BERTINI: Is there a high-level?

MR. SILL: Well yes, there is, you know Tim Klein? But they are looking at things at a much higher level than in the ITS program.

DR. DROBOT: But you know, there is a memo that came out again from the White House from - it's got 25 points and several of them really deal with standardization and what you do.

DR. BERTINI: Sorry, I thought you were talking about high-level like me, but.

MR. BELCHER: Well, there is one of those too though among the -

MR. SILL: The departmental standards representative for USDOT actually works for Rob, so. We have - and he and I cooperate together.

CHAIR SUSSMAN: It sounded to me like about five minutes ago I'm not sure I could keep up there - no, replicate your language. It seemed to me that you were saying here's what we're going to do and here's what we're not going to do because we have constraints on how much we can get done. And I'd be very interested to know whether the standards harmonization subcommittee is comfortable with that JPO posture. Maybe you could say it again if you recall what paragraph you were talking about at that point and see if there's buy-in to that.

DR. BERTINI: Sure. I think I was just expressing the fact that we do have a strategic plan that we'll share with you. I don't know if you've shared the draft with the subcommittee?

MR. SILL: This draft?

DR. BERTINI: Yes.

MR. SILL: No.

DR. BERTINI: Okay, so that will be shareable momentarily with - it would be good to get your reaction. So I think we laid out in that strategic plan a strategy to address the fact that we're not, you know, that we do have priorities.

MR. SILL: There's something to be said for doing a relatively small number of things well versus a large number of things very badly, and ultimately we have set some priorities to recognize that even some of the things that are hard where it's not obvious how we can achieve success, if the payoffs are large they're still going to be pursued.

DR. BERTINI: I guess the other piece of what I mentioned was just - maybe it wasn't the right point in the conversation, but I wanted to mention that in the context of European cooperation that the standards harmonization effort began and continued with a data dictionary effort and then rather than saying we're going to harmonize everything regardless of whether it needs harmonizing, three specific applications that both parties are working on anyway in parallel and saying we're going to harmonize the ingredients of these applications and from that learn - benefit from that sort of pilot study approach. So what are the things that come up when you want to do rear collision warning and intersection collision avoidance and sustainability approach for traffic signal timing. And from those we will learn a lot and I think that the components that will be harmonized to make those applications work will flow to other applications as well.

DR. DROBOT: I have a thought that may be spurious, maybe not. As a citizen at some point I take a driver's test and get a driver's license. And if I look at a typical booklet that I have to study before I get there there's nothing about ITS in the booklet yet. So the challenge, and

let's say this comes into being. What would have to show up in that booklet, what would I have to know, how would other people have to know so I can fly to Europe, get out in the morning, drive on the wrong side of the road yet safely drive my vehicle using the ITS infrastructure that exists?

MS. BRIGGS: I will try to answer that. I will say that we have not addressed that, but we know those are the sorts of things that we have to address. Right now the focus of the V to V and V to I program is seeing if it works, you know, testing the basic technology. I think once we have proven that it does then we go forward with the more aggressive plan for tech transfer and that would - those sorts of things would certainly be part of that plan. But we don't have the ability to address everything up front and so we have consciously made decisions on what will have to come later. And we fully expect to have to think a lot more about the tech transfer aspects later.

DR. BERTINI: There's also a human factor resource thread here that will deal with the essentially driver interface issue. So we will be learning a lot about that.

VICE CHAIR DENARO: So my question is concluding that with respect to our guest, we don't know what standards we want and need yet, is that a true statement? I mean we know some, obviously, but we don't have a definitive list in terms of 17 standards we're going to need.

MR. VONDALE: Well, Ford has kind of put together an outline of its wants, its list. We submitted that to the rest of the industry to say we would like the rest of you to take Ford's list and tell us whether you agree with it, disagree with it. We're doing that through CAMP and VIIC and so that assignment occurred - I made that assignment because I'm on the board of the VIIC last year, late last year, but they're still working on it. So -

VICE CHAIR DENARO: So there's a straw man out there at least.

MR. VONDALE: There is a straw man and hopefully we can move in the direction of getting at least industry consensus on what are the essential elements that need to be harmonized.

VICE CHAIR DENARO: And how - is JPO engaged with that?

MR. SILL: Partially. We also - I mean I think you saw our unofficial draft list in developing your list of course.

VICE CHAIR DENARO: So you have a draft list also.

MR. SILL: We have our own draft list.

VICE CHAIR DENARO: Okay.

MR. SILL: However, we have an agreement with the European Commission to develop this draft list cooperatively to come up with a single draft list.

VICE CHAIR DENARO: Do they already have their draft list too?

MR. SILL: They do actually and it's public. And to a large extent we are in agreement. However, there are a whole bunch of holes in that list because we don't have yet our North American architecture.

VICE CHAIR DENARO: Right, right.

MR. SILL: And until we have those other interfaces defined we don't know what the other things are. So what the Europeans did, they did this very nice table of where all these standards fit into their architecture and then they had on there in the next column it said North America and equivalent and it said Japanese equivalent and there's a whole bunch of holes in the North American column because we haven't defined our architecture that broadly. So there's a short list, but it needs to be much longer and as the information becomes available we'll make it longer.

CHAIR SUSSMAN: Is there something that the JPO can do to bring that to

culmination more quickly, or is it really out of your hands? Getting the column filled in in the matrix you just described.

MR. SILL: Well, ultimately it's our responsibility to get the architecture out there, identify those interfaces appropriate for standardization and full deployment, prioritize that as I described earlier. It's our job and I think we know we need to do it as quickly as we reasonably can. So yes, there's very much something we can do and I suspect if we don't do it it won't get done.

CHAIR SUSSMAN: You betcha.

DR. BERTINI: I guess one question that came up was higher levels, U.S. presence or involvement. And I guess one question that I would have that I don't know the answer to and maybe we would have to discuss internally, at what - what would trigger us needing someone from the State Department to be visible in some forum to debate or to take on a U.S. position? So I think that is not off the table as far as I'm concerned, as far as I understand the process. If that need is identified, I mean I'm assuming as things move forward if we need that level - White House level or State Department level advocacy for something where we feel like we're going to miss out or where our country's industry is going to be harmed in some way. So I'd say that even if we haven't done that yet it's not to say that we wouldn't in the future if we needed to and we would - we would take your input on that as we move forward if there's a call for that.

VICE CHAIR DENARO: Okay. There's goodies behind me, so. After Joe presses any key. Did you get that Any key?

DR. BERTINI: I think that's in the description of the chair's -

VICE CHAIR DENARO: I recommend we take a short break and we'll come back and finish with the final committee and then - subcommittee, and then we'll go into the wrap-up. So

15 minutes.

(Whereupon, the foregoing matter went off the record at 2:26 p.m. and went back on the record at 2:42 p.m.)

PROGRAM EVALUATION AND STRATEGY SUBCOMMITTEE

VICE CHAIR DENARO: So I'd like our last subcommittee then to report out. Are you doing that, Joe?

CHAIR SUSSMAN: No, Peter's going to do that job.

VICE CHAIR DENARO: Okay. Does Peter know that?

CHAIR SUSSMAN: Yes, he does.

VICE CHAIR DENARO: Okay.

MR. KISSINGER: Okay, I'm going to report out on the program evaluation and strategy subcommittee which was ably chaired by Ann Flemer who handled that responsibility over the phone, quite ably I might say. And I think it's safe to say that the subcommittee had minimal activity before today although I do think Joe and Ann and Joe the other member, two Joe's, had had some discussion, exchanged some emails I think before today, and I joined a few hours ago. The conversation today was I think greatly assisted by the fact that Joe with some great input from Chris was working off a discussion document that kind of framed the conversation for us and we quickly I think came to agreement on what I would call three tenets, sort of overarching tenets that kind of framed the rest of the discussion. And these were, one, that we were focusing on program evaluation and not project evaluation. We recognized that I believe every project that JPO takes on they have an evaluation component as part of it. We had no reason to doubt their competence in performing that function so we really were trying to emphasize the top-level program evaluation

component. Number two, we most certainly recognized that resources well beyond what JPO actually has maybe needed to be effective in some of these areas and in fact that may be part of what we end up including in some our recommendations. And three, we recognized that what we say may well go beyond the charter of JPO as seen by others. So in that context after some spirited discussion we identified five declarative statements that I suppose could be interpreted as either recommendations or mission statements or objectives for JPO or the JPO program. And I'm going to read all five of those to you today and our intent was based on input from the full committee that we would refine these in the future and that in all instances we would comment on them from at least two perspectives, one basically sort of an evaluation of the present and the existing plans to the extent that we would enable the full committee to make comments about how well we thought JPO was doing in the context of these individual elements, but also to look to the future and possibly make recommendations with respect to the need to follow through in the future and reevaluate or revisit these. And in that context it may be appropriate that we would be either helping develop or recommend the development of specific performance metrics which might be necessary to actually accomplish these program evaluations. So I would I guess commend your attention as I read all five of these because we are looking for comments today and obviously we won't be doing any future work in a vacuum so I'd be happy to share this with you at any point in the future.

The first is JPO should work towards institutional transformation where it is of value, for example, PPP relationships and federal-state interactions. Number two, JPO should have a technology strategy that recognizes and leverages technology development in other sectors such as defense, telecommunications and so forth. JPO should develop and execute a multimodal ITS strategy. JPO should work towards an ITS program that contributes to a sustainable transportation

system where the three E's are present: economic development, environmental protection and social equity. So, again.

CHAIR SUSSMAN: I think you skipped the first one. You gave us four. I don't think you gave us the very first one.

MR. KISSINGER: Oh, sorry about that.

CHAIR SUSSMAN: The effective environment.

MR. KISSINGER: JPO should provide an effective environment for system development, investment and deployment by others, and by "others" we kind of mean that in the broadest possible context. So as I said, in each one of those we'd be looking ultimately for committee buy-in. We would refine those and we would develop more specific comments to flesh that out so that it would be appropriate for a final report. Do either of the Joe's want to add anything?

CHAIR SUSSMAN: No, I think you did a nice job in summarizing what was a more lengthy and complex meeting than it turned out on paper. Joe?

MR. CALABRESE: No, I'm fine.

MR. OSTERBERG: Division staff - electronically to get some feedback or how?

MR. KISSINGER: Yes, sure. I'm sure our able chairman will be happy to do that.

CHAIR SUSSMAN: I will send it to our able Valerie Briggs to do that.

MS. BRIGGS: I can do that, sure.

MR. KISSINGER: All right, well we look forward to bringing back some recommendations in a future meeting.

VICE CHAIR DENARO: May I - just one question. Trying to absorb the things

you said. The recommended charter may go beyond the current charter. Can you flesh that out a little bit of what you might have in mind?

MR. KISSINGER: Well, I think one aspect of that was that we discussed whether or not we should be commenting simply on the program that specifically deals with JPO or whether we might broaden it to all of the Department of Transportation. And I think also part of it was just simply the perception, there may be different perceptions within the committee and within the community as to what the role of JPO is. So when we comment on it it may look a little funny to some people, but as long as we all agree then we'll be happy.

VICE CHAIR DENARO: So we've noted repeatedly that the JPO is a research organization and what you're saying is that maybe that needs to be revisited?

MR. KISSINGER: Well, I mean clearly I think there seems to be a growing consensus of this committee that deployment is a very important aspect so I think that is sort of the contrast between strictly a research organization and someone that helps facilitate deployment. That would be a good example of that point.

MR. OSTERBERG: I think that the document we just looked at, the summary 2010-2014 talks about research and facilitates. I think having facilitated, you're already here, I think that's what I heard you say.

MS. BRIGGS: This is the standards program document so I'll continue passing it around.

MR. OSTERBERG: So I don't know how substantively we change that here.

CHAIR SUSSMAN: Yes, we talked about the notion of - Valerie was in a meeting and we talked about it, that yes, JPO is a research organization, but that doesn't mean that it doesn't

have some responsibilities for facilitating the development of standards as it is and for aiding in deployment although that's not research per se, but to have some - those broader responsibilities, at least that's the view of this subcommittee and I hope the view ultimately of the whole committee. The other one I think Peter, we were a little nervous that we might be overstepping our bounds was the second of those, JPO should work towards institutional transformation where it is of value, and one could argue that's a more senior responsibility within DOT or even higher than that, but our sense was it was important enough to give it some profile.

MR. OSTERBERG: To that, I think at the risk of wordsmithing in a forum like this which would be inappropriate, but even phrases like "work toward" that's an objective that you can never fail at. You can always say you're working towards something.

CHAIR SUSSMAN: We chose it carefully.

MR. OSTERBERG: Yes, I would have chosen facilitate, enable, something that's a little more qualitative than working toward. That's a little mealy-mouth for my -

MR. KISSINGER: We understand.

CHAIR SUSSMAN: That's reasonable.

MR. KISSINGER: We got to the point where we decided not to wordsmith these any further until we got input.

MR. OSTERBERG: Yes, no I appreciate that. Something the staff worked on, change "happy" to "glad" and back to "happy" again.

DR. BERTINI: But I think we view ourselves as let's say citizens of the USDOT and of the larger transportation community and so you know, through our nudging and encouraging and I mentioned the bully pulpit that we have when we can talk about these things, when you can

also talk about these things and push us and push the community I think it's appropriate for you to push us and encourage us to think bigger. So personally I'm in favor of that.

MR. OSTERBERG: Well at the risk of kind of a busy phase that I've kind of lived by professionally is when in charge, take charge and when you're not in charge, try to take charge anyway and they just might let you. This may be a case where -

CHAIR SUSSMAN: There's a former Air Force - excuse me, Army colonel speaking now, so.

DR. BERTINI: But sometimes there is a vacuum. I mean we may as well try to fill it.

MR. OSTERBERG: Amen.

CHAIR SUSSMAN: The other point I have that's worth emphasizing is the subcommittee says that what the committee should do is program evaluation and not product evaluation. And I say it with the full understanding that in the past we've done a fair amount of project evaluation, particularly in the first iteration of this committee where we had people marching before us talking about individual projects and we said thumbs up, thumbs down, thumbs sideways. And I think we concluded perhaps we don't want to do that anymore given the relatively scarce time resources of this committee so we want to kind of move it up a level. Although our charge from the Congress says that you are to opine on projects I guess our sense is perhaps that's not a particularly good use of our time. But I'd be interested in other people's views of course.

VICE CHAIR DENARO: Well, I think we want to worry about success and acceleration, we've used those words a lot, and those need to go well beyond just the research project.

CHAIR SUSSMAN: Right.

DR. BERTINI: I was going to say, we plan to continue to bring to you our colleagues from other agencies who we have, NHTSA and FTA, that we plan to continue that.

SUMMARY AND WRAP UP

VICE CHAIR DENARO: Great. That was very useful in these two days. I strongly encourage that, that was great. So to close off this session here let's talk about what has to happen now. I don't consider the subcommittee work done, I don't think anyone will disagree with me on that, but what we decided was the subcommittees need to bring at the end of the day recommendations to the committee which then the committee will use to formulate its overall recommendations that will be going into the memo. So the subcommittees continue to work that. So I think we need to be clear -

(Automated phone message)

VICE CHAIR DENARO: That's why we've got Joe here.

MR. VONDALE: Do we need to remain - is there anybody on?

CHAIR SUSSMAN: Well, I don't think so otherwise they wouldn't be asking us that question. You want to just finish it? Go ahead.

VICE CHAIR DENARO: So, to be clear then, we want the subcommittees to bring a set of recommendations based on their work, you know, a little fleshed out with how they came up with those recommendations perhaps. So that's the objective. What we need to decide collectively is when. So we need to set a deadline for ourselves. I'm open to suggestions.

MR. KISSINGER: Well, I would presume that that would be a major agenda item at the meeting, whenever that is.

VICE CHAIR DENARO: Yes, because by the next meeting we need to be drafting the memo.

MR. VONDALE: So is the plan to send out a draft of these combined recommendations, let us have a chance to look at them so we come prepared at the next meeting to finalize?

VICE CHAIR DENARO: That's a good idea.

CHAIR SUSSMAN: So you're saying something important it seems to me, that is, that we won't have an advice memo to JPO until after the next meeting. Is that what you're saying or what?

VICE CHAIR DENARO: I'm willing to hear other suggestions, but I don't see how that's possible, frankly. I can see potentially where - in fact ideally that we would have a draft memo that we maybe circulated by email that we come together, that's one of our main discussion topics. But I don't see us having it finalized prior to the meeting. You know, if anybody disagrees.

MR. KISSINGER: I think that sounds good.

VICE CHAIR DENARO: Someone might give some sort of idea about standardized format or harmonized format so that when the reports come in that you conceivably staple them together as one big report.

MR. KISSINGER: There's three reports I believe are on the website, on the JPO website. So - and what you'll learn is that there is no standard format. So I think that's wide open. But it's not a bad idea that we do those anyway so we can see the level in what we did.

CHAIR SUSSMAN: Oh you mean the three earlier reports.

MR. KISSINGER: Correct.

CHAIR SUSSMAN: Not - I think it was confusing. People thought you thought that the subcommittee three reports were on the website and that's not the case.

MR. KISSINGER: No, no, no, I meant the three memos. So -

CHAIR SUSSMAN: What Peter's calling for is a format of the subcommittees to - is that right?

MR. KISSINGER: Yes. I mean, I think we might as well do our subcommittee reports in the context of the committee report. So if you have a suggested format to put that in I think it'd be helpful at some point. I don't know that we need to know today.

CHAIR SUSSMAN: No, I think that's reasonable.

VICE CHAIR DENARO: So the answer is we don't have a suggested format, but that is a reasonable suggestion. Let's go back to - I mean, this is somewhat tied into the date of the next meeting but I really think we need to set ourselves a deadline to deliver these subcommittee reports. So we're sitting here in the beginning of March.

MR. CALABRESE: How about the date of the next meeting?

VICE CHAIR DENARO: Well, let's defer this discussion because we're going to talk about it at the next session. So let's defer the date of the subcommittee reports until we discuss the next meeting and we'll address it in that.

CHAIR SUSSMAN: It's all -

VICE CHAIR DENARO: Yes.

CHAIR SUSSMAN: It's hard to separate one from the other. We've now had two meetings in an 8-week period. I'm just not sure how much more - how many more meetings this committee can tolerate in a relatively short period of time. People have day jobs of course. So I'm

just - I'm just not sure what to suggest. Obviously doing it sooner so we get an advice memo to JPO is important, but at the same time I don't know how intrusive we can be on other people's time having already met twice this calendar year. So I'm open to what people think. I guess I'm wondering whether we - just to put it on the table, I'm wondering if we can't do an iteration that could be absent face-to-face discussions on these reports and try to synthesize them into something that then could be recirculated. Is that attractive to anybody? Is it reasonable? Is it achievable if we do it that way? You know, perhaps ask people to have the subcommittee - here are the steps that I would imagine. We would try to get out kind of a template for what subcommittee reports would look like. We could do that in a week or two. Then the subcommittees would submit their reports perhaps, I don't know, two or three weeks after that, maybe the end of March should be the target for that. No? Too soon? Okay. What would you think a more appropriate possibility is?

MR. BELCHER: Maybe the end of April.

VICE CHAIR DENARO: Yes, I agree, end of April.

CHAIR SUSSMAN: So the end of April.

VICE CHAIR DENARO: I agree, because especially if we're going to involve outsiders there's just not going to be time to get them involved.

CHAIR SUSSMAN: So the model - again, we're feeling our way here - the model that you're projecting is that substantive work has to be done before the subcommittees can report as opposed to we've done the substantive work and now we have to - now we can tune it to report.

VICE CHAIR DENARO: That can vary by committee, but I know speaking for our subcommittee I feel we have a lot of work yet to do.

CHAIR SUSSMAN: Okay, that's fair enough. Then the end of March is not

realistic at all. Is the end of April realistic?

VICE CHAIR DENARO: Yes.

MR. VONDALE: Maybe for an interim report. Our committee is - the work that's going on in standards harmonization is going to take many months or even years.

CHAIR SUSSMAN: Oh, but the outcome of your committee isn't the proposed standards, it's that we're to propose what JPO is supposed to do vis-a-vis standards.

MR. VONDALE: Even there I think that there's still a lot of questions to be answered. As I said, we can have an interim report. I wouldn't view it as a final.

VICE CHAIR DENARO: Each of the reports is only going to be as complete as they can be. So I mean if we collectively feel we need to do more work in there we can always do that. But again, the end goal is we've got to get to the point where we're writing a draft memo to Congress, to JPO and with our recommendations. That's the goal.

CHAIR SUSSMAN: So the end of April is realistic, Scott? You shook your head vigorously when I said the end of March. End of April is a reasonable deadline?

MR. BELCHER: I think given - yes. I think we can have something by the end of April, sure.

CHAIR SUSSMAN: And Peter, that's realistic for the -

DR. SWEATMAN: Yes. I think so. I mean, I think as far as technology group's concerned, you know, we've got this summit to think about too and we've got to move pretty fast on that if we're seriously going to do something in the fall and I think that's something that this whole committee needs to buy in on.

DR. BERTINI: So we - I think in the next week or two we really need to have a

straw outline.

CHAIR SUSSMAN: So is it fair - first of all, I've heard no sentiment whatsoever for anyone saying that's not a very good - that's a bad idea. But let me just take the temperature of everyone around the table. If that is something that we ought to be urging happen, is that - is anybody concerned about that? Adam, you often worried about those issues in terms of readiness and value. So it sounds like there's buy-in on that idea. Is it fair then to delegate to your subcommittee working perhaps with some help from JPO people to flesh out a proposal for what that actually might be as opposed to we'll meet at the White House which is of course not terribly attractive. But to have some substance so that people could go forward with a proposal that will pass muster with Peter and everybody else it has to pass muster to?

DR. SWEATMAN: Yes. We decided we need to put a white paper together to flesh out what this meeting's about, what we're trying to achieve.

CHAIR SUSSMAN: So is that something that can be done in a couple of weeks?

DR. SWEATMAN: I think it's - I think the end of March would be realistic for that.

DR. BERTINI: I took an action on that to get the agenda from previous similar summits, the one on broadband and emergency response and the one on healthcare, so we can - I'm going to start addressing that.

VICE CHAIR DENARO: And someplace in this process we have a discussion with Aneesh Chopra himself to run it up the flagpole, make sure that's what he's thinking also, just give a line.

DR. BERTINI: Yes. It might have to be at an odd hour, I will alert you, but I'm sure we can arrange that.

CHAIR SUSSMAN: An odd hour?

VICE CHAIR DENARO: Odd hours are?

DR. BERTINI: Nine o'clock at night or whatever.

CHAIR SUSSMAN: Oh, we're just getting rolling at nine o'clock at night.

DR. BERTINI: But I think it would be great for you know to have an outline to have a conversation. I think that would be - if we want to do that.

CHAIR SUSSMAN: Let me ask a fairly direct question. In some of the earlier discussions about Chopra I had the impression that Peter Appel was controlling that access so he has to be sold on the idea that we're going to do that.

DR. BERTINI: Yes, exactly. I think the concept he's sold on, but I think this - we will want to present this white paper outline to him, the team and I, I'm looking to Valerie, probably Chris, we'll probably talk to him about that next week. I think we have a meeting with him on other topics so we'll.

MR. VONDALE: Do you need anything more from us?

CHAIR SUSSMAN: Yes, I think I was about to say, I think you could project quite fairly to Peter that the congressionally mandated by safety loop subcommittee committee believes strongly that you ought to go ahead with it.

DR. BERTINI: All right, we will do that, and I think you know, maybe Bob and Peter, if you have a chance to put a little email together as a bit of impetus that would be great. So I think we had a very good discussion, a very good -

VICE CHAIR DENARO: Yes, we did. I think even today we found a few dimensions of this meeting that we hadn't thought of previously. So let us go back and think about

this a little bit and then get it down on paper, and then we'll all review it.

DR. BERTINI: We'll keep Walt in the loop.

VICE CHAIR DENARO: Absolutely. Yes.

DR. BERTINI: We hit on something there that was pretty -

DR. SWEATMAN: Is that going to be sufficient, or should that be a memo or a letter from the chair of this committee then recommending that?

DR. BERTINI: Or if you want to do it in two pieces, you know, simultaneously. Get us something.

CHAIR SUSSMAN: Yes, let's use our bully pulpit at least in Peter Appel to -

DR. BERTINI: Yes, that'd be great.

CHAIR SUSSMAN: - to get this done. So we can coordinate on that.

VICE CHAIR DENARO: My attitude is we've got to do this meeting right because we get one shot.

DR. BERTINI: Yes.

CHAIR SUSSMAN: Exactly.

VICE CHAIR DENARO: But my other attitude is so we're going to do it right. We're not going to fail, we're just going to do it.

CHAIR SUSSMAN: So that - so we'll shoot for that whole package by the end of March, a letter from the committee together with a proposal, the white paper as you called it, and we'll hopefully get that on Chopra's agenda for September or October, somewhere in that timeframe. Okay. And so the other - that's excellent. So the other deadline is that by the end of April - actually one before that. In the next two weeks we'll get out a template for subcommittee

reports so people can have a fill-in-the-boxes kind of thing to work from. The end of March, the white paper. The end of April we'll have the subcommittee reports and my view is let's get those in hand and then we can decide when and where we need to meet. We can see actually what we've got in hard copy, what the intellectual output of all this has been and then we can say okay, we ought to meet in two or three months' time wherever, as opposed to trying to set that now. That would at least be my suggestion, but I'm willing to try and nail down a date if people would prefer to get things on their schedule earlier.

VICE CHAIR DENARO: Well, the other step I think we want in there is that template in two weeks, the subcommittee reports end of April. I think we ought to put a straw man date down for a draft of our committee - overall committee memo that we circulate and review before we meet. So to that point I would suggest if we have end of April then I'd say mid June-ish for a draft of the overall memo that we collaborated on through email and so forth. And then that sets us up for a meeting sometime soon after that.

MR. BELCHER: If you've written the memo by then, what would be the purpose of another meeting? It seems to me that if you're going to have a meeting, the meeting is probably when you've got the draft reports to report to the group, get group feedback to then lead into the memo. If you've done the memo we're done for the year, right?

VICE CHAIR DENARO: Yes, but I mean the thing that scares me is attempting to come here and write a memo as a committee. Okay, that's always not been a pleasant experience for me. So I have - I think we need a draft that we start with and then we're reviewing. So - and you know what? Practically speaking, what's going through my head too is I'm thinking there's going to be like four to six of us who are really involved in this thing because everybody gets real busy and

so forth. So we're not going to have the opinions of the entire committee. So I think having this draft in place but then having as much of the full committee as possible will give us a better chance to really review that and vet it and do things we need.

CHAIR SUSSMAN: I think - let me put words in your mouth. I think what Scott is suggesting is that we could do an awful lot of vetting of the integrated report without meeting face to face.

VICE CHAIR DENARO: No, I'm agreeing. Yes.

CHAIR SUSSMAN: So that perhaps plausibly we could have an advice memo that people had signed off on without actually having another face-to-face meeting.

VICE CHAIR DENARO: Okay, that's possible.

CHAIR SUSSMAN: Is that where you were going?

MR. BELCHER: That's what I said but I don't think it's what I meant.

CHAIR SUSSMAN: Okay.

MR. BELCHER: Because as I - if what you were going to do is to do this all through the internet and have a meeting after the report then I fully agree with what I said. If you think that there's - if you think that getting together is valuable and I think there may be value in getting together once the committees have drafted their reports to apprise the rest of the committee about what's in their reports and how they got to the recommendations because the rest of us won't have been part of that I think that's where a meeting would be valuable. I think you could do a one-day meeting where each subcommittee goes through, you know, walks the rest of the group through what their recommendations are and then you get input and feedback from the rest of the group, not to write the report while we're here but to refine it so that it is in fact a reflection of the group. If

you're going to have a meeting that would be the meeting I would have.

MR. KISSINGER: I agree with that and I think if there's a reasonable chance of that you ought to try and schedule that. Everybody would be happy to cancel it, but if you try and schedule it two months from now you're going to have a hard time doing it quickly.

CHAIR SUSSMAN: So I lost where in there the advice memo would be officially submitted to JPO. So where in that trajectory? I didn't quite follow that part.

MR. BELCHER: The scenario I just described, the draft reports are due in April.

CHAIR SUSSMAN: Right.

MR. BELCHER: They're circulated, there's a meeting in -

CHAIR SUSSMAN: That's the subcommittee report.

MR. BELCHER: The subcommittee reports. There's a meeting in May or - yes, there's a meeting in May in which the subcommittees report out to the group here are our findings, here's how we got there and then refine them based on the input of the group. Then from there there's a draft committee memo prepared that's circulated and vetted through the internet and a final report delivered in whenever, June, July, however long it takes to write that final report.

DR. BERTINI: And there could be a phone meeting.

MR. BELCHER: Sure.

MR. GLASSCOCK: And remember I think the FACA guidelines that state that whatever comes out of the subcommittee has to be fully endorsed by the entire committee. So it would have to be presented to the whole committee and agreed to.

CHAIR SUSSMAN: So you're saying then that at the end of April subcommittee reports come out, are distributed to the entire committee. No attempt at that point is made to meld it

into a final report, but rather we have a face-to-face meeting where you tell me what you don't like about my report, I tell you what I don't like about your report and around we go, and then after that we then meld it into a final official submission.

MR. BELCHER: Yes.

CHAIR SUSSMAN: Okay. What do you think of that?

VICE CHAIR DENARO: That's fine. I'm fine with that.

CHAIR SUSSMAN: Well, we could try and make it work. What do people think?

Is that - Peter, you sounded like you were supportive of that.

MR. KISSINGER: No, I agree. I mean I'd only add - I mean again, if each of the subcommittees sticks to a standard report theoretically you know you just staple those three together, you have an early draft of the letter you know. So. I have a feeling since half the committee really isn't here -

CHAIR SUSSMAN: Well, we're going to hear from some members whose names I call -

MR. KISSINGER: I know, but I mean I have a strong suspicion that you're going to need another meeting to try and reach consensus. I hope that's not the case, but.

CHAIR SUSSMAN: Well, I hear what you're saying. So people feel that there will be something to say by other subcommittees about what a particular subcommittee has proposed? That is, we'll come in with our - what is it called, Peter? The program strategy -

MR. KISSINGER: Well, I would - with respect to our subcommittee, yes, in particular.

CHAIR SUSSMAN: So people will have things to say and in turn we'll have things

to say about Peter's and the - Peter Sweatman and so forth. Well, it's fine with me if people - I was frankly trying to avoid bunching yet another meeting into a 5-month period. If we in fact do meet in May that'll be, you know, three meetings in a 20-week period which is pretty intense for this kind of a process.

MR. KISSINGER: Well push it to June.

CHAIR SUSSMAN: Well.

MR. KISSINGER: We're not on any arbitrary deadline. I mean, make it easy on ourselves.

DR. DROBOT: But I think it's worthwhile once you get the first drafts of the subcommittee reports to really circulate to the full committee. And my suggestion is that you have in the least a series of phone calls or something of that sort to just get a first round of feeling where the problems are if there are any and what needs to be reworked before we have a face-to-face.

DR. BERTINI: Yes, I think because everyone is very busy if you circulate a draft not everyone's going to read it and digest it and comment.

DR. DROBOT: Unless you have an event that forces them.

DR. BERTINI: Right, but if there's a phone call where perhaps the subcommittee lead does a little 5-minute walk-through, high-level verbal reminder of what's in there and then you know we organize a response.

DR. DROBOT: Say it now or keep your peace.

CHAIR SUSSMAN: Are we allowed by FACA to do a phone meeting without advertising it in the general register and getting President Obama's permission or whatever you have to do?

MR. GLASSCOCK: No. It can't be open to the public, so.

DR. DROBOT: Can a subcommittee?

MR. GLASSCOCK: Yes.

DR. DROBOT: So you can do it in the guise of phone calls.

MR. GLASSCOCK: Yes Joe, we can - so we could do that before. We could do a phone call conference.

DR. BERTINI: But subcommittees can meet without being open to the public.

MR. GLASSCOCK: Oh sure, I'm sorry.

CHAIR SUSSMAN: Yes, but we're talking here about getting other - not just subcommittee meetings, people getting input from the other subcommittees.

DR. DROBOT: You could structure that as a subcommittee meeting.

MS. BRIGGS: You can also advertise it in the public register as a committee meeting. I mean, we have done public meetings via webinar.

MR. GLASSCOCK: Yes, so it could be done via webinar. You know, so there's no problem.

MS. BRIGGS: I would bet you're going to get other people on that webinar.

VICE CHAIR DENARO: Yes, it's a lot easier to make a phone call than it is to travel someplace, so.

MS. BRIGGS: Yes.

CHAIR SUSSMAN: And do they have speaking privileges and all that?

MR. GLASSCOCK: You're talking about other members?

CHAIR SUSSMAN: Yes.

MR. GLASSCOCK: Yes, sure.

CHAIR SUSSMAN: No, not other members, people from the public.

MR. GLASSCOCK: Oh, no, they have to - they have to let us know that they want to make a presentation or speak and that rarely happens. They may call in, you know, but the likelihood of someone participating is very low.

MR. SILL: If you really want privacy then you have it in Nome, Alaska and in January, right?

MS. BRIGGS: I mean, the point of this is - we're not trying to keep people out here.

CHAIR SUSSMAN: Okay, end of April the subcommittee reports, tentatively some kind of phone webinar to vet the - to get inputs from the entire committee on each subcommittee report and then shoot for, I don't know, mid-June for a meeting that will be for the purpose of looking at a final draft of the report. Right? No? What don't you like about that? That's what you said.

MR. BELCHER: I think the - no, I know, but what you did is you took - I don't see a whole lot of value - yes. I see the value - I mean, I'm not going to be comfortable signing onto the other two subcommittee reports unless I understand what underlies them. And so you know, I do want to know what drove the conclusions of the subcommittee report. I mean, the subcommittee that Adam and Jim and I are on, it's pretty technical and it's pretty substantive and it's an area that we each know a little bit about but most of the rest of the group don't know very much about. So I wouldn't - if I were you I wouldn't sign off on anything we said until we kind of walked you through how we got there and why we got there. And then we can have a discussion and we can say this is appropriate for the committee or it's not appropriate for the committee to make this kind of

recommendation. I find - I think that that is the most valuable time for us to spend together. I think after we've written a report sitting around kibitzing about, you know, the final report isn't as really valuable. We can do that by phone. We can do that by the internet. But the point at which I think you need the face-to-face is the point at which we've got draft committee reports and draft recommendations and you need to bring everybody up to speed and get them on the same level.

CHAIR SUSSMAN: So if the subcommittee reports are submitted at the end of April -

MR. BELCHER: Yes.

CHAIR SUSSMAN: - you're suggesting that we have that meeting sometime in May or June?

MR. BELCHER: Yes.

CHAIR SUSSMAN: That is, the meeting to actually have at it in terms of people getting truly comfortable with what their peers have said.

MR. BELCHER: Yes, and then you write the report after that and if you need call or if you need other things after that you can schedule them after that. But that would be my recommendation.

MR. CALABRESE: Maybe at the same meeting you could go through the subcommittee reports and then kind of do a preliminary outline of the report.

MR. BELCHER: Sure.

CHAIR SUSSMAN: So you would - so between the end of April when the reports are submitted and that meeting in the middle of June does it make sense to have some kind of a webinar to get some pre-discussion of this before we all get together face to face in June? Is that a

sensible action? I mean, that's like an hour of people's time, that's not a big deal.

DR. SWEATMAN: I think we need to - I kind of agree with - these subcommittees, we haven't really been specific about what the subcommittees are really going to do, but it depends who turns up for the subcommittee as to what the subcommittee is going to write. You know, Scott alluded to the expertise side of it. It just depends who makes some strong statements on any given occasion is going to influence the subcommittee. At the end of the day it's really this whole committee I think that's going to form an opinion based on kind of the homework that's done by the subcommittees. I think the subcommittees are kind of doing some homework but I don't see that each subcommittee is going to write a third of the report and we just - and we have a report.

CHAIR SUSSMAN: No, there's obviously input.

DR. SWEATMAN: We need the whole view of the whole committee I think. Otherwise the subcommittees could kind of come up with virtually anything, depending on who gets on the line on any particular day.

CHAIR SUSSMAN: So I think we have a plan. Let me try it one more time and see if I can get around the table without somebody scowling at me. So in two weeks' time we'll have a template for the subcommittees to work against. That action goes to my vice chair and me working with JPO staff, okay? So that's number one. So you folks should have that in a couple of weeks' time. At the end of April we'll expect the subcommittee reports to be available. That will be distributed to all the members of the committee. We are anticipating some kind of a webinar in mid-May just to kind of touch base and I loved your stuff, I hated your stuff, whatever it may be. We get some idea of where we are and we'll shoot for a face-to-face meeting in the middle of June at which hopefully we will synthesize the whole thing and have something quite close by the time

we're finished to something that's within modest iteration to get to a - to get to an actual formal advice memo to JPO. Is that okay? I'm not even going to look around the table.

And then superimposed on that is that we're shooting for the end of March for getting things rolling on this - for having the white paper to the White House, a letter from the committee urging Peter Appel or whoever else has to be urged that we go forward in this direction. I mean, if you're going to the White House I'm imagining you might have to ask the Secretary of Transportation about that, but you know, you know that better than I do. But that's all programmed for the next three or four weeks to get that done by the end of -

DR. BERTINI: And I think your support for that will only help us because I think it's already something that we want to do, just a matter of using the structure of this group to be very specific about what outcomes we want and what specific function we want to address during that time. So that will help a lot.

CHAIR SUSSMAN: And the subcommittee chaired by Peter will be taking the lead on the committee part of that, working with Rob Bertini and whoever else you so designate. That'll be very exciting if we can make that - make that happen.

DR. SWEATMAN: Yes, I think we want to work very closely with Rob to put this together.

CHAIR SUSSMAN: Oh, absolutely. Okay. So I think we just - I don't - does someone have something to advance that? Yes. So I think we've done much of this and I think what ought to happen in terms of trying to set a date, we ought to get a doodle poll out or something like that to the committee with a week or two of days sort of ranging I'm going to nominally say from the 10th of June to the 20th of June, somewhere in that window and see what looks like it

makes sense, and start to zero in on that.

DR. BERTINI: I know that there's a meeting that Shelley will be at in early June so we'll use whatever date she'll be back from that.

MR. SILL: Rob, if you wait about 10 seconds. The meeting is from June 6 through 10. It's in France so the availability will begin at the earliest on the 13th and then there's a meeting you're going to that's meeting June 27.

CHAIR SUSSMAN: And perhaps we ought to have another doodle poll for sometime mid-May for days on which people are available for a 1- to perhaps 2-hour webinar at which we talk about the reports that you have submitted at the end of April, that is the subcommittee reports. So if we could do all that that'd be super. Everyone's in stunned silence at this point, but. I figured we'd be out of here at 2 o'clock in the afternoon to tell you the truth, but it didn't quite happen. Is there anything further that anybody wants to discuss as long as we are - as long as we're all together and all warmed up by this time?

DR. BERTINI: I would beg your indulgence for a minute.

CHAIR SUSSMAN: Sure.

DR. BERTINI: So this is my last meeting with you as the acting director of the ITS JPO and so I want to use this chance to remind you that Shelley Row is returning on April 11.

CHAIR SUSSMAN: And she's going to want to change everything.

DR. BERTINI: And so of course I will remain as the deputy administrator and Peter Appel and I will remain actively engaged with you and with this program I think on a - I've asked Valerie and John Augustine to help on a day-to-day basis and I think that's been working very well and I think we've benefitted from having - I've benefitted from Valerie's leadership role and

working, Joe and Bob, with you to a great extent. I want to thank Stephen and Charlie for their logistical superpowers in getting these meetings arranged and you know dealing with all the details, and also Valerie and John and Chris and the entire ITS team including Walt and Steve today and the many others who've attended and participated actively in your meetings as well as our other DOT colleagues who are very committed to the program. A lot of people went to a lot of work to set up a wonderful demo for yesterday morning. I feel - I felt bad about on one hand the fact that that didn't come off, but in spending today with you I feel like this was a very productive meeting and so I feel like it was useful to hold the meeting here in Michigan. We can say we helped the Michigan economy a little bit.

CHAIR SUSSMAN: Which it can badly use.

DR. BERTINI: I appreciate all of the efforts that you all, that all the committee members expend. It is a bit -

CHAIR SUSSMAN: Even those who didn't show up, right?

DR. BERTINI: Even those. But it's a bit humbling and extremely heartening to see how much passion you have for our program and for making sure that we collectively realize the benefits of the technologies that we're focused on. And the fact that you care so much that you are spending this time with us helping to shape and push us, it means a lot to me personally and I know to Peter and the other members of the leadership at the DOT and to our staff we really appreciate all that you do. So I think I've thanked everyone. I didn't thank the transcriber person but thank you and again, it's been a privilege to work in this position as acting director and I know that as we move forward Shelley will resume her role as director but I'm not going to - I'm not going to stay away, I'm not going to be less visible to you although she will again have the day-to-day responsibility for

running the office.

CHAIR SUSSMAN: So let me comment in response that at MIT we say there's no worse job than an acting anything, and you've been in this acting position following a very tough act to follow, a very competent person for almost a year and we think you've held up your standard very well, especially in that to the best of my ability to discern it they took absolutely zero off your plate and you replaced someone who worked full-time only on this.

DR. BERTINI: Right.

CHAIR SUSSMAN: So thank you for your efforts. And you mentioned the passion of the committee and we all - we all have that passion. And sometimes that may come across as us being in some sense adversarial, but I think it's important that JPO understands we're all on the same side of this battle, we all want ITS to succeed in the best possible way and people should recognize that some of our passion doesn't reflect any lack of support, but only a desire to make things as good as they possibly can be.

DR. BERTINI: And we appreciate that. Maybe I should - I've already singled out Valerie and I really appreciate everything you've done in this year because I think Shelley will be a full-time director and she will, you know, have hopefully a little more time than I have had. But John Augustine is also the person I would single out. He's not here at the moment, but he really has stepped up in an impressive way. He's an impressive person and I couldn't have looked good in your eyes and I appreciate that without John's daily and sometimes 24-hour day support, so I will tell him that when I see him, but I wanted you all to know also that I really.

CHAIR SUSSMAN: So I think the lovefest is almost over, right?

DR. BERTINI: Yes.

CHAIR SUSSMAN: We're almost done with that.

VICE CHAIR DENARO: One more thank you. Since Jim has joined us again, Jim Buczkowski who was our speaker last night -

CHAIR SUSSMAN: Yes, he did.

VICE CHAIR DENARO: - giving us perspective of - on OEM and how they're moving forward with their customers I think was a great perspective for us to have as well, so thank you for joining us.

CHAIR SUSSMAN: Getting us successfully through a dinner with God knows how many bottles of wine consumed before you got up there.

VICE CHAIR DENARO: Briefing people who are drinking wine is not necessarily a great experience.

MR. KISSINGER: Any idea where the meeting will be held?

CHAIR SUSSMAN: I haven't given it a microsecond of thought at this moment unless somebody has some suggestions. I know my friend, some of you may know him, Matthew Edelman, who's the executive director of TRANSCOM in the New York metro area has been lobbying me to meet in lovely downtown - where is it? Hoboken or something? Where TRANSCOM is right across the river from New York and we could perhaps watch that operation as well as have our meetings. But that's just one possibility. I just wanted to make you aware that he had invited us to do it if we so chose. I don't understand the politics of doing it or not doing it there, but -

DR. BERTINI: I don't know of any. I think we're of course happy to host it in D.C. or the committee members are from all over the country so.

CHAIR SUSSMAN: Yes, we wanted to do this demo. It would be a little hard to do it in Hoboken I'm guessing, but there are other sites where it might be better.

MR. SILL: It may be worth trying to come back here again and the odds of Mother Nature's cooperation are better than in March.

CHAIR SUSSMAN: My quota for coming to Detroit is once a year. Absolute limit.

MR. BELCHER: Joe, just as you think about this, the one comment I would make is it's a lot easier for the public sector members to travel to Washington, D.C. than it is for them to travel to other locations.

CHAIR SUSSMAN: Indeed. An excellent point.

MR. BELCHER: That's just something to think about.

VICE CHAIR DENARO: We usually have had our meetings in Washington.

CHAIR SUSSMAN: Yes, most of them have been. It's only actually quite recently - I think the Oakland one was the first offsite.

VICE CHAIR DENARO: We specifically wanted it too because we wanted to see some things.

CHAIR SUSSMAN: Outside the Beltway. Okay, well thank you all for your participation and I look forward to all the outputs that we've so blithely committed to and let's hope they actually happen. That's certainly the intent. Thank you.

ADJOURN

(Whereupon, the foregoing matter went off the record at 3:35 p.m.)